Marine Life Protection Act Initiative
Public Comments Presented
at the BRTF Meeting in Fortuna
on October 25, 2010

Vivian Hellivell
Oct 25, 2010

PRINCIPLES OF
THE PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS
REGARDING MARINE PROTECTED AREAS

Marine Protected Areas (MPAs) occur along the coast of California and many other coastal areas of the nation. The sizes, purposes, and regulations on use of these areas vary greatly, as do the terms to describe them. Some, for example, have few restrictions, while others may be complete "no-take" areas. MPAs have garnered much attention recently among researchers and marine advocacy groups as a tool for fishery management, protecting marine habitats, or preserving unique marine ecosystems. While MPAs may offer promise for the conservation and management of marine fisheries and their habitats, much is unknown about what benefit, if any, has been derived from existing MPAs for the conservation and management of marine fish and their habitats (other than in small, localized areas) or what benefit may be derived from the establishment of new MPAs. To date, there has been a great deal of hype, but precious little science.

Although MPAs may offer potential benefits for marine fish resources and their habitats, they may pose a real danger, too, if strict adherence to good science is not maintained regarding their purposes and siting. MPAs, particularly those imposing no-take, could result in vast areas of prime fishing grounds being "locked up", which could needlessly impact fishery production. Moreover, no-take MPAs may result in heavier fishing or other activities outside of their boundaries, exacerbating rather than resolving fish resource problems. MPAs, by themselves, may also create a false sense of security about fishery resources – neither fish nor currents respect artificial boundaries.

In California, for example, reserves have been in existence for as long as 39 years, yet little data exists regarding their overall performance. To date no funding has been dedicated to ongoing monitoring of these reserves, even in the developing Channel Islands process. The fishing industry does not support the establishment of any reserve without a structure for assessing its performance and the funding for that assessment, nor of any reserve whose establishment is inconsistent with the principles of this document.

To initiate a rational and science-based discussion on MPAs, mindful of the need to conserve and manage fish resources on a sustainable basis, and to protect marine habitats and ecosystems and the fisheries that depend on these fish resources, the Pacific Coast Federation of Fishermen's Associations establishes the following principles:

1. No establishment of an MPA shall inhibit sustainable fisheries within that MPA that have negligible impacts on the habitats or species of concern.
2. MPAs are not a substitute for other forms of fishery management, including seasons, quotas, or gear restrictions, nor shall MPAs be a substitute for prohibitions on pollution, dumping, or the introduction of exotic species.
3. MPAs shall not be used as a tool to reallocate resource use. Creation of any zones for recreational fishing only, or for dive fishing only, must be balanced by creation of zones of comparable value for commercial fishing only.

4. Planning and management for the marine environment must be done on a regional scale, and be catch-based and multiple-use. The planning approach must ensure participation by stakeholders and other interested parties from the beginning. Land use and other non-fishing impacts must also be addressed.

5. Methodologies and criteria for assessing performance of all MPAs must be developed before new MPAs are implemented; this includes funding for performance assessments.

6. The review of the effectiveness of existing MPAs, as well as the siting and establishment of any new MPAs, must include fishing men and women from both the commercial and sport sectors. This is necessary not only because MPAs affect or could affect fishing areas, but more importantly because fishermen have an intimate and working knowledge of the marine environment, including that of many areas of the ocean where there has been no research.

7. A thorough and science-based review needs to take place of all existing marine protected areas along the U.S. Pacific coast to determine their effectiveness for either: a) providing baseline research information; b) protecting critical marine habitats; or c) protecting specific marine fish or organisms. This review should be undertaken by a panel, including marine scientists, appropriate fishery agency representatives, knowledgeable commercial and sport fishermen, and knowledgeable marine conservation representatives, and will include a report with recommendations for each existing MPA and no-fishing zone as to its effectiveness and whether there should be any changes in regulations and boundaries, and whether it should be maintained, reduced, expanded, or eliminated, and why.

A similar review must be conducted of the types and effectiveness of MPAs in use in other parts of the world to provide the state, scientists, and the fishing industry guidance on whether new MPAs should be established offshore California and other states and, if so, what their objectives should be, their appropriate size, and types of regulations for their use. It is important to recognize the uniqueness of the U.S. Pacific Coast when developing objectives. Measures that are appropriate in tropical waters may not be appropriate here.

8. If, after thorough review, there is a decision to proceed with revising current MPAs or establishing new ones, **the objectives of each MPA must be stated clearly;** i.e., whether it is to provide baseline research, protect habitat, or protect specific species, or some combination thereof. Regulations for use of the MPA must be appropriate to the objectives. A reasonable time frame for meeting the MPA's objectives must be included.

9. The regulation of the types of use to be permitted in each MPA can and should vary depending on the objectives of the MPA, with MPAs established as any one of three or more types, including those to protect habitats, those to protect specific species of marine fish or organisms, and those where take is prohibited.

10. Where no-take MPAs may be established, not only must all types of fishing be prohibited, but so too must any unpermitted scientific collection or any other form of removal from within the boundary of the MPA be prohibited. **No dumping or introduction of pollutants shall be permitted in any no-take MPA,** and human access shall be greatly restricted in order to maintain the pristine condition of the MPA and its value for baseline research.

11. In the siting of any new MPAs, factors to be considered shall include the uniqueness of the area, its biological productivity/diversity or special habitats, the human impacts on that

area (including fishing, other types of aquatic harvesting or collection, pollution, and structural changes such as dumping, artificial reefs, or oil rigs). **Siting shall be based solely on the evidence regarding the site itself** and without regard to proximity of existing parks, marine sanctuaries, or research institutions.

12. Recent changes in fishery management practices, fishing effort, and gear types used must be included in consideration of any new MPAs so as not to use MPAs to address problems already addressed by existing fisheries management. **The entire existing and proposed web of federal and state fisheries regulations applicable to the area must be considered in designing any new MPA.**

13. In the establishment of any new MPAs, **careful consideration shall be given to what, if any, impacts the establishment may have on fishing,** or the use of certain types of fishing gear, what impacts an MPA may have on fishing effort outside the MPA boundary, and what steps can be taken to mitigate any impacts on fishing from the establishment of an MPA. **Any such impacts shall be distributed among fishermen in a fair and equitable manner.** Every effort shall be made to protect existing fisheries, consistent with the science-based selection of unique or productive areas deserving of some level of protection under MPA status.

14. Where significant reduction in fisheries is an unavoidable consequence of establishment of an MPA consistent with the above guidelines, **funding for the compensation of fishermen in proportion with the reduction of the fishery shall be part of the establishment of the MPA.**

15. Recognizing a changing ocean environment and the continuing increase in human knowledge of the marine environment, **MPAs shall be subject to adaptive management,** with regular reviews conducted of their performance while recognizing that regulatory or protective measures may not have immediate results. Reviews should include assessment of non-fishing factors that inhibit the productivity of an MPA, including non-point source pollution problems. Under an adaptive management program, utilizing experts from the fishery agencies, marine researchers, social scientists, and the fishing and conservation community, **MPAs should be subject to periodic review of their regulations, boundaries, and whether some existing ones should be eliminated and/or new ones established.**

Chair Cindy Gustafson and
Members of the MLPA Blue Ribbon Task Force
c/o California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814
Via Email: MLPAComments@resources.ca.gov

Re: Northcoast Regional Stakeholder Group Single Proposal

Dear Chair Gustafson and Members of the Blue Ribbon Task Force:

Please accept the following comments on behalf of the undersigned organizations. We are writing today to urge you to support the consensus compromise the Northcoast Regional Stakeholder Group agreed to pass forward to you as the appropriate proposal for the North Coast region of the Marine Life Protection Act.

We appreciate the time and dedication the Blue Ribbon Task Force (BRTF) has devoted to the North Coast region of the Marine Life Protection Act (MLPA) over the last 12 months and for your service to the State of California. We acknowledge the time and commitments poured into the single proposal, and strongly recommend that you support the community driven proposal as the clear choice for your Preferred Alternative.

The single proposal will best serve the people and wildlife of northern California, because it focuses on quality, does the best job of protecting the most special places along the North Coast, and strives to best meet the Science Advisory Team (SAT) guidelines while minimizing the socioeconomic impacts to the community.

In summary, the single proposal:

- Represents our best concerted effort to meet the goals of the Marine Life Protection Act, including enhancing recreation, education, and research opportunities, as well as protecting key heritage sites in northern California;
- Offers protection at biodiversity hotspots like Reading Rock, Humboldt Bay, Cape Mendocino, the Mattole Canyon, and Vizcaino, which provide critical habitat for sea life and are popular with divers, kayakers, and birders;
- Finds consensus and balance in a coastal community with MPAs that can be supported by all ocean users;
- Would provide ownership of the MPAs to the community that both designed the maps and will be most impacted by the MLPA;
- Has the support of a wide range of interests, including local residents, scientists, conservationists, commercial and recreational fishermen and recreational users.

Marine protected areas, especially fully protected marine reserves, are an investment in the future health of our coastal waters. As the Blue Ribbon Task Force, you have an historic opportunity to create a legacy for northern California's oceans and for future generations.

We urge you to make the most of that opportunity by adopting the unified Proposal as your Preferred Alternative.

Thank you for your consideration of our comments.

Sincerely,

Jennifer Kalt
Board of Directors Member

Pete Nichols
Executive Director

the Northcoast Environmental Center

HUMBOLDT BAYKEEPER®

Linda Sheehan
Executive Director

Don McEnhill
Executive Director

CALIFORNIA COASTKEEPER ALLIANCE

RUSSIAN RIVERKEEPER®
"We're On It!"

Adam Brown
RRAS's MLPA Liaison

Scott Greacen
Executive Director

REDWOOD REGION AUDUBON SOCIETY

epic
Keeping Northwest California wild since 1977

William Weaver, PhD
Board of Directors President

Friends of the DUNES

Joe Geever
California Policy Coordinator

Surfrider Foundation®

Kaitilin Gaffney
Director, Pacific Ecosystem Programs

Ocean Conservancy
Start a Sea Change

Karen Garrison
Co-Director, Oceans Program

NRDC
THE EARTH'S BEST DEFENSE

Hawk Rosales
Oct 25, 2010

Statement by the

InterTribal Sinkyone Wilderness Council

Submitted to the MLPA Blue Ribbon Task Force

October 25, 2010

Fortuna, California

My name is Hawk Rosales and I am the Executive Director of the InterTribal Sinkyone Wilderness Council.

We have reached a critical stage of the MLPA process. Thanks are due to the members of the Regional Stakeholder Group for their hard work and dedication in seeking to address Tribal uses. And we thank the Task Force for your efforts to achieve that same goal. The Round 3 Draft Proposal is a significant step in the right direction. Today, we are proposing several revisions to the Proposal. These are set out in detail in the letter we sent to each of you last Friday. I would like to summarize those revisions today.

The first issue concerns a legal question. The Regional Stakeholder Group lumped Tribal uses with recreational uses in these proposed MPAs: Big Flat SMCA, Ten Mile Beach SMCA, Big River Estuary SMP, and Navarro River Estuary SMRMA. We have previously explained the problems with this approach. Under no circumstances are Tribal uses recreational in nature. We understand this may have been done because the RSG had been led to believe California law does not allow for the separate identification of Tribal uses. It is not your responsibility to resolve this legal issue. We are still trying to identify the source of the advice that has led to this misconception so we may explain why it is wrong. For our purposes today, we ask simply that you recommend to the Fish and Game Commission that it identify Tribal uses as a separate category in the regulations. When the legal issue is finally resolved, the Commission can then act on the Round 3 Proposal without the need to reconsider the size and location of the MPAs.

We propose the following language to accomplish this purpose for these four MPAs:

> **Members of California Indian Tribes and Tribal communities shall be allowed to fish, gather and harvest marine resources for traditional, non-commercial subsistence, ceremonial, religious or stewardship purposes.**

Second, we ask that SMCA shoreline ribbons be established adjacent to the Sea Lion Gulch SMR, Ten Mile SMR and Point Cabrillo SMR. Each of these State Marine Reserves overlaps a significant area of use for the Council's member Tribes. The Blue Ribbon Task Force has endorsed the ribbon approach as an alternative to avoidance on two occasions. First in its May 17 Motion Regarding Traditional, Non-Commercial Tribal use and again in its July 22 Motion Regarding the

Round 3 Planning Process. The July 22 motion states that where avoidance is not possible, shoreline ribbons should be considered as a means to acknowledge and accommodate Tribal uses.

We propose that the ribbon areas begin at the mean high water mark and extend 1,000 feet out to sea. This is consistent with the Fish and Game Commission's recent action to carve out a Tribal use area adjacent to the Stewarts Point SMR in response to a request by the Kashia Pomo Band of Indians.

The question of whether near shore SMCA or SMP ribbons can be created for Tribal-only gathering of marine resources does not have to be resolved by the Blue Ribbon Task Force. We will discuss this matter with the attorneys who are advising the Department on this question. Because we are entering the final stages of this MPA process, we ask today that you recommend that Tribal-only gathering and harvest ribbons be created when the legal authority to do so is finally clarified and settled. Tribal-only gathering and harvesting areas adjacent to these SMRs will not lower the Level of Protection currently assigned to them. If these three near shore ribbons do not allow harvesting of marine species by the general public, there is practically no risk of damage to the marine environment. The small numbers of Tribal people who would be using these areas and the stewardship principles they follow will ensure that conservation values will be maintained.

Third, we ask that a near shore ribbon also be created adjacent to the Vizcaino SMCA that would be open for Tribal-only gathering and harvest use. A near shore ribbon for Tribal use will increase the level of protection, as fewer people would be using the area for the take permitted under the MPA regulations. As a result, the conservation value of this area would be enhanced.

Fourth, we ask for clarification of the mechanism to be used to ensure Tribal uses in the MPA proposed for the Ten Mile Estuary. The RSG suggested that this MPA should be an SMR if waterfowl hunting is not allowed under state law, yet it proposed no take of any kind should be allowed under the designation as a State Marine Recreational Management Area. Whether waterfowl hunting is permitted and this MPA retains its designation as an SMRMA, the regulations should incorporate the Tribal use language we have proposed. That was the RSG's intent.

Finally, we are concerned that the seasonal closures at Rockport Rocks and Vizcaino Rock will prevent Tribal traditional use activities during the times they are in effect. We do not believe the Tribes have been adequately consulted about the problems this will cause. We ask that you recommend that these areas be open for traditional, non-commercial gathering and harvesting only by Tribal members, pending resolution of the legal question about Tribal use by the Commission.

Thank you for your consideration of our requests. We will be available to discuss these issues with you and staff at your convenience.

InterTribal Sinkyone Wilderness Council

P.O. Box 1523 Ukiah, CA 95482 Phone (707) 468-9500

InterTribal Cultural Conservation for Sinkyone Indian Lands

October 22, 2010

Cindy Gustafson, Chair
Members of the Blue Ribbon Task Force
MLPA Initiative
1416 Ninth Street, # 1311
Sacramento, CA 95814

Sent via email

Re: Comments on NCRSG Round 3 North Coast Draft MPA Proposal

Dear Chair Gustafson and Members of the Blue Ribbon Task Force:

The InterTribal Sinkyone Wilderness Council (Council) has reviewed the Round 3 Draft Marine Protected Area Proposal adopted by the Regional Stakeholder Group. With certain modifications set out below, the Draft Proposal offers a reasonable balancing of science, conservation, Tribal and other stakeholder considerations.

We first express our appreciation for the efforts of the Regional Stakeholder Group, the Science Advisory Team and the Blue Ribbon Task Force to work with the Tribes in the North Coast Region to accommodate Tribal traditional non-commercial uses in the MPA design and siting process. Resolution of the issue of Tribal uses has been made more difficult by the failure of the Marine Life Protection Act to address the issue directly, which presents unique challenges to you, the RSG and the SAT. We look forward to working with you to finalize a network of MPAs that fully addresses the needs and concerns of the North Coast Tribes and the Sinkyone Council, and that can be recommended to the Fish and Game Commission for adoption.

Our comments focus on the following issues, and specifically pertain to MPAs located within the geographic area of concern for the Council and the Tribes of Mendocino and Lake Counties:

1) Identification of Tribal uses within the MPA regulations;

2) Modifications of the Sea Lion Gulch SMR, the Ten Mile SMR and the Point Cabrillo SMR;

3) Modification of the Vizcaino SMCA;

4) Clarification of Tribal uses in the Ten Mile Estuary SMRMA; and

5) Special seasonal closures at Rockport Rocks and Vizcaino Rock.

Each of these is discussed below.

1. Separately Identify Tribal Uses as a Distinct Category of Use in MPA Regulations

The strength of the RSG's Draft Proposal is the unequivocal expression of intent to avoid interference or impairment of Tribal traditional, non-commercial uses in the design and creation of MPAs. The RSG sought to carry out that intent by listing the species that would be allowed to be taken by Tribes as a subset of "recreational uses." That intent is also expressed in the RSG's motion, which declared that each MPA should include the following language:

> "All California Indian Tribal traditional, non-commercial fishing, gathering, and harvesting for subsistence, ceremonial or stewardship purposes shall be uses that are exercised by the members of California Indian tribes and tribal communities."

We appreciate the diligent efforts of the RSG to find a sensible way to accommodate Tribal uses in the design of MPAs. We believe the Proposal is a significant step toward a reasonable resolution of this issue. However, several important modifications to the RSG's Proposal will ensure that the Initiative achieves the goal of avoiding adverse impacts to Tribal uses.

We have stated before our opposition to the inclusion of Tribal uses within the category of recreational uses and we reiterate that position here. It is critically important for Tribal uses to be separately and distinctly identified in the regulations, in order to ensure that if there are future changes in recreational uses, those changes will not automatically affect Tribal uses. Moreover, identifying Tribal uses as a separate category is consistent with the unique legal status of North Coast Tribes as sovereign governments with aboriginal rights, a status the State has frequently recognized.

The RSG may have been under the impression that State law in its current form does not allow separate identification of Tribal uses, and that, as a result, there is no option other than to include them in the recreation category specified in the Marine Life Protection Act. That is not the law. Despite numerous requests, no one from the Department, the Attorney General's Office or the Initiative has been able to produce to us a legal opinion which analyzes this question. We were promised in February that such legal guidance would be forthcoming, but thus far none has materialized. In our August proposal, we set out the legal basis for separate recognition of Tribal uses, and we will not repeat that here. Suffice it to say, by regulation, the Department has on at least five occasions recognized special rights on behalf of California Indian Tribes who are identified by name along with the species that can be taken and the gear type allowed. Our proposal for separate identification of Tribal uses is entirely consistent with longstanding State practice.

Our request is simple and straightforward: that the Blue Ribbon Task Force recommend that the Fish and Game Commission follow its well-established precedent and include Tribal uses in the appropriate MPAs as a separately identified category of use. The language proposed by the RSG is a good starting point in meeting this goal, but we would like to propose that the Task Force recommend the following language to accommodate Tribal uses where appropriate:

> California Indian Tribes and Tribal communities shall be allowed to fish, gather, and harvest marine resources for traditional, non-commercial subsistence, ceremonial, religious stewardship purposes.

In our view, this language provides more legal efficacy than the RSG proposed language, which simply declares the kinds of uses that qualify as Tribal.

We ask that the BRTF recommend this language for the following proposed MPAs: Big Flat SMCA, Ten Mile Beach SMCA, Big River Estuary SMP and Navarro River Estuary SMRMA.

2. Modify the Sea Lion Gulch SMR, the Ten Mile SMR and the Point Cabrillo SMR to Ensure Continuation of Tribal Uses

The RSG Proposal contains eight (9) MPAs in the portion of the North Coast Region where the Council's member Tribes continue to use the marine environment for traditional, non-commercial purposes. The Council is especially concerned about the effect of the Sea Lion Gulch SMR, the Ten Mile SMR and the Point Cabrillo SMR on the ability of its member Tribes to

continue traditional, non-commercial uses for the purposes we have outlined. All of these areas are within the ancestral and aboriginal territories of the Council's member Tribes and are considered by the Tribes to be extremely important gathering and harvesting areas

Although the RSG stated its intention that Tribal uses should be allowed to continue within SMRs, we do not believe that approach is viable. As you know, the Marine Life Protection Act prohibits the take of all plant and animal species within SMRs, and the Fish and Game Commission would not have authority to authorize such use by regulation. Consequently, we do not believe it is legally possible to include Tribal use language in the regulations for the Sea Lion Gulch SMR, the Ten Mile SMR and the Point Cabrillo SMR.

To enable continuation of traditional Tribal uses in these important locations, areas along the near shore need to be designated for Tribal-only traditional, noncommercial gathering and harvesting use. From the Council's perspective, it is irrelevant whether this area is designated an SMCA or a SMP. We propose that for the Sea Lion Gulch SMR, the Ten Mile SMR and the Point Cabrillo SMR the Tribal use zone would consist of a near shore "ribbon," beginning at the mean high tide mark on the east and stretching 1,000 feet west into the ocean. The SMR would begin where the SMCA or SMP ends. This arrangement is consistent with the intent of the RSG that Tribal uses should be allowed to continue in this area.

Our proposal raises two questions: first, would such an exclusive Tribal use zone comply with the MLPA science guidelines; and second, is there legal authority for the Commission to create such a zone without specific legislative authority?

As to the science guidelines, we have asked the SAT to evaluate the exclusive use ribbon approach as a viable alternative to prohibiting all Tribal take within SMRs. We await the results of that analysis. We are confident that it will show that traditional, non-commercial Tribal uses will not adversely affect the Level of Protection currently assigned to the Sea Lion Gulch SMR, the Ten Mile SMR and the Point Cabrillo SMR. As we have demonstrated in previous submissions, Tribal uses have minimal impacts on the marine environment, due to the small number of Tribal members carrying out traditional practices and the stewardship ethic by which such practices are conducted. Provided the SMCA or SMP is not opened to gathering or harvesting by the general public, the risk of downgrading the Level of Protection is small to nonexistent. Stated another way, creation of a Tribal use ribbon along the lines we propose is consistent with the conservation goals of the MLPA. We note also that our approach is perhaps more protective of the environment than the SMCA recently created by the Fish and Game Commission for the Kashia Band of Pomo Indians, which is open for use by the general public.

This conclusion is consistent with the motion adopted by the BRTF on May 17, in which it is stated: "To maximize conformance with SAT guidelines, the NCRSG is urged to couple offshore SMRs and/or MPAs with high or moderate levels of protection with near shore SMPs (or SMCAs as appropriate) designed for tribal resource protection." This is precisely the approach the Council urges with regard to the Sea Lion Gulch SMR, the Ten Mile SMR and the Point Cabrillo SMR.

As to the legal question, it is not necessary for the Blue Ribbon Task Force to resolve this issue in order to recommend the creation of a Tribal use ribbon to the Fish and Game Commission. We continue to seek to engage counsel for the Department, the Commission and the State on this question, and expect to have this matter clarified before the final MPA proposal is submitted to the Commission for consideration. If this legal question is subsequently resolved in favor of the Tribes, as is our expectation, and the Task Force has not included the ribbon approach in its set of recommendations, it may be too late to fully develop that approach at the Commission stage of the proceedings. A recommendation from the BRTF, contingent on resolution of the legal question, will enable the Tribes to make their strongest case before the Commission.

APPENDIX B

MLPA North Coast Regional Stakeholder Group

Motion Regarding State of California Recognition of a Traditional Tribal Use Category within Marine Protected Areas under the Marine Life Protection Act

Adopted August 31, 2010

Motion

By this formal, approved motion, the MLPAI North Coast Regional Stakeholder Group (NCRSG) requests that the MLPA Blue Ribbon Task Force advise and strongly urge the California Department of Fish and Game (DFG) and the California Fish and Game Commission (F&GC) to formally adopt a special category of tribal uses within marine protected areas (MPAs) in order to protect and preserve the traditional cultural practices and heritage of California Indian tribes and tribal communities, and to develop co-management arrangements between tribes and tribal communities and the State of California.

The NCRSG proposes that the following language be included in the MPA regulations: "All California Indian Tribal traditional, non-commercial fishing, gathering, and harvesting for subsistence, ceremonial or stewardship purposes shall be uses that are exercised by the members of California Indian tribes and tribal communities."

Background

Ample authority exists for the state's recognition and separate treatment of aboriginal tribal uses within MPA regulations. The Legislature has found that "[j]urisdiction over the protection and development of natural resources, especially the fish resource, is of great importance to both the State of California and California Indian tribes." Further, California law acknowledges tribes as a separate and distinct category of users, and that tribal gathering and harvesting has a cultural purpose which the state should protect: "To California Indian tribes, control over their minerals, lands, water, wildlife and other resources is crucial to their economic self-sufficiency and the preservation of their heritage." The California State Legislature also has found that the state and the tribes share, as a mutual goal "the protection and preservation of the fish resource". Fish and Game Code §16000.

California MPAs are part of the National System of Marine Protected Areas, which were created by federal executive order in 2000. That order explicitly states that the creation and management of MPAs shall "not diminish, affect, or abrogate...the United States trust responsibilities to Indian tribes." California is therefore obligated under federal law to respect and protect Indian use rights in the MLPA process. Executive Order 13158, May 26, 2000, 65 Fed. Reg. 105,34909 (May 31, 2000).

In adopting and implementing regulations pursuant to the MLPA, DFG and F&GC are subject to the above stated statutory provisions, in addition to the provisions of the MLPA, which requires that "interested parties" (e.g., tribes and tribal communities) be consulted in the process for establishment of new MPAs.

The above provisions collectively provide ample authority for the state's separate and distinct treatment of tribal uses.

California MLPA Blue Ribbon Task Force

Motion Regarding Round 3 of the Marine Protected Area Planning Process for the MLPA North Coast Study Region

Adopted July 22, 2010

The MLPA Blue Ribbon Task Force (BRTF) continues to be extremely impressed by the tremendous efforts of the MLPA North Coast Regional Stakeholder Group (NCRSG) in creating several widely supported and well thought-out marine protected area proposals which strive to achieve the science guidelines within the MPA planning process. It is clear that the guidance given by the BRTF with respect to incorporating cross-interest support and understanding socio-economic impacts, as well as the unique needs of the local tribes and tribal communities, has been taken to heart. These achievements notwithstanding, it has also been illuminated during this meeting by the input from the MLPA Master Plan Science Advisory Team that the minimum science guidelines, especially with respect to the spacing and replication of MPA's within the MPA proposals, has not yet been achieved. With this in mind we provide the following guidance:

1. The NCRSG must consider all necessary means to improve the proposal(s)' compliance with the science guidelines. If the NCRSG's Round 3 proposal(s) do not meet the science guidelines to the extent possible, recognizing that in some areas habitat distribution precludes meeting the science guidelines, the BRTF may be forced to consider modifying the Round 3 proposal(s).
2. Continue to achieve strong cross-interest support and utilize local knowledge.
3. Adhere to previous guidance to avoid tribal traditional, non-commercial uses, to the extent possible.
4. Where avoidance is not possible, the use of state marine conservation areas may be considered as shoreline ribbons to acknowledge and accommodate tribal uses that are protective of the marine environment, recognizing that the BRTF has been advised that such uses will be available for all non-commercial users until relevant agency and/or legislative action is taken.
5. The NCRSG should state its intent on how traditional tribal uses should be acknowledged and accommodated within specific SMCAs.
6. The NCRSG is encouraged to take into consideration tribal proposals to implement avoidance with regard to specific tribal uses.

In addition, we want to express our strong support for efforts of tribes and tribal communities to work with the California Department of Fish and Game and the California State Legislature to gain a resolution to their concerns regarding the MLPA.

WILDERNESS UNLIMITED
22425 Meekland Avenue
Hayward, CA 94541-4934
(510) 785-4868

~~October 25, 2010~~

Subject: MLPA North Coast Round 3 Summary

Attn: Mr. Ken Wiseman
MLPA-I Team
Regional Stakeholders
Science Advisory Team
Blue Ribbon Task Force

To Whom it may concern:

On behalf of the Soper Co, Wilderness Unlimited, the Wilderness Unlimited Foundation and the members of Wilderness Unlimited, I would like to compliment the members of the NCRSG, SAT and BRTF for all of the hard work you have done to date, however we request that you relook at the effects the proposed Vizcaino SMCA will have on a delicate long term conservation agreement.

We believe that the local review and planning of the north coast MLP did not take into account the impact that their actions will take. Re: the Vizcaino SMCA.

Soper Company has owned the property in question, the DeVillbiss Ranch also known as the Rockport Ranch that includes about 5 miles of oceanfront, for over 50 years. Wilderness Unlimited has had the recreation/wildlife resource management of the 3500-acre property for over 30 years. This conservation partnership has protected a very remote piece of ocean habitat via controlled access and invertebrate take controls more stringent than the DF&G's. The resulting aquatic life is in great shape.

Both Soper Co. and Wilderness Unlimited are small private companies who did not have the manpower to participate in the stakeholder group process.

In fact, most of the people who will be affected by the proposed closure are not local.

Soper Co. is an extremely conservative timber company; many of their properties were over cut and had stream degradation when they acquired them including DeVillbiss. They have an exemplary land stewardship record.

Wilderness Unlimited's mission statement is to provide quality outdoor recreation on private property. The mantra is "Conservation through proper Utilization". The focus is on diversity and a wide range of opportunities. Private coastal access of this type is rare and unique. The private conservation agreement between Soper Co. and Wilderness Unlimited is "unparalleled" on the west coast. Dismantling the years of conservation work (submitted in prior public comments) would be a travesty.

Never the less, both companies did participate in the MLPA process via the public comment process as follows:

Back in March 2010, at the onset of the Round 1 MLPA process, of the eight proposed arrays listed, only three had a "closing effect" to the oceanfront of the DeVillbiss Ranch. Only two listed the term Vizcaino SMCA.

When the Round 2 summaries were released all four MPA proposals had an impact on DeVillbiss Ranch. Mr. Bill Morrison of the Soper Co. visited the Fort Bragg open house on July 6th and expressed his concern for the proposed closure. I visited the Eureka open house and expressed my concern for the Vizcaino SMCA's (included in all four proposals) but if necessary while not perfect, would support the Sapphire 2 Plan (south portion) if it had to be that way.

However, I tried to discuss the new, shore access "Ribbon tool" that had been recently enacted and applied to the Stewarts' Point SMR/ Private property after the north central coast MPA had been approved. I asked if the precedence of this ribbon tool could be applied to DeVillbiss, based on the conservation history and stewardship of the users involved.

After the open house, Mr. Kruger, President of the Soper Co. and both filed public comments requesting review of the Vizcaino SMCA. I offered several possible alternatives as well.

Next up was the NCRSG's, two day meeting on August 30 and 31. Neither Soper or WU could allocate manpower to sit in on the meeting or make

personal public comment at these meetings. We were led to believe that the Sapphire 2 (south portion) proposal of the Vizcaino SMCA had much better support versus the full scale Vizcaino that spread numerous miles to the south. I have documented for public record already the disbelief as to how the Vizcaino review was left nearly to the end and how the prior trade offs that were made to the north and south and how a new plan hatched overnight that basically left the now proposed Vizcaino SMCA as being nothing more that the entire length of the Soper/Wilderness Unlimited DeVillbiss Ranch.

The economic effects of a DeVillbiss closure to Soper, Wilderness and others are unknown but fourfold:

The loss of membership monies to Wilderness Unlimited, decline in Wilderness Unlimited funds to Soper, less monies for Soper conservation projects and on a local note: The loss of sales revenue in the form of goods and services to the local communities is unknown. ~~However~~, over 90% of the usage of this property is from non Mendocino County residents.

I implore the NCRSG, SAT and BRTF to review the proposed MPA re: the Vizcaino SMCA and find a way to preserve the long-standing Soper/Wilderness Unlimited program.

Respectfully,

Wilderness Unlimited

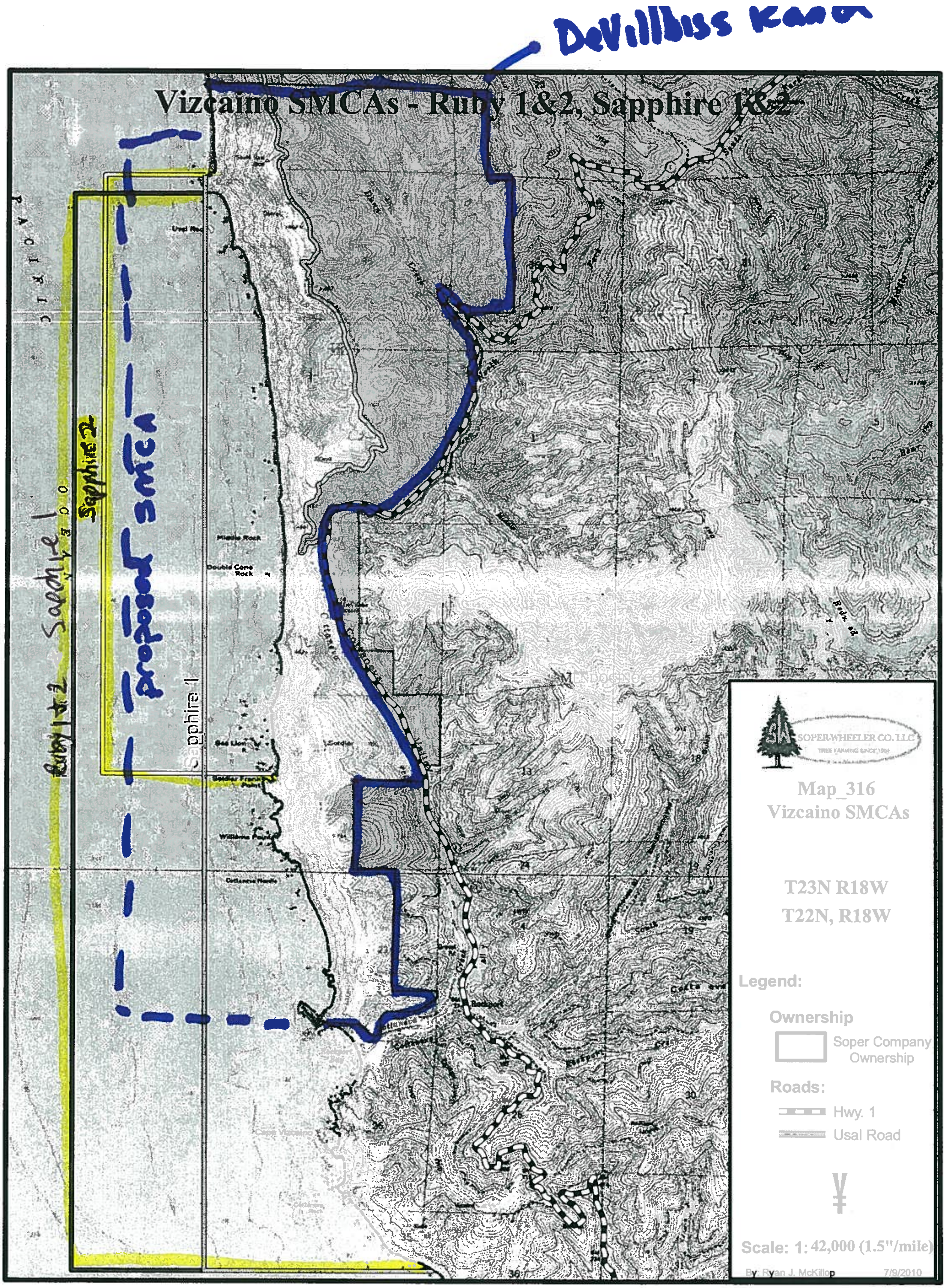
Rick Copeland

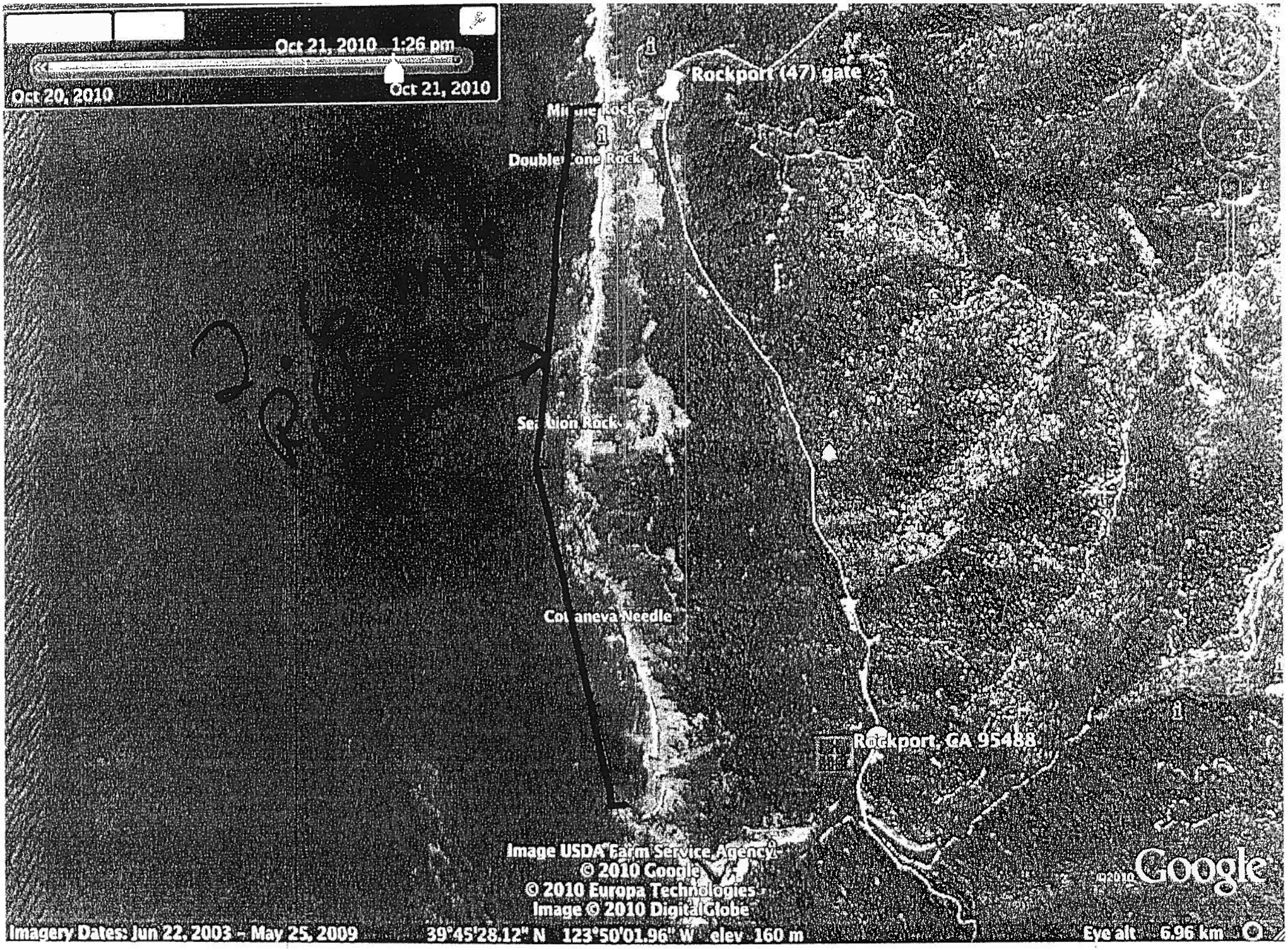
The options already submitted include:

Change the Vizcaino SMCA usage to include finfish and invertebrate take.

Apply a "ribbon" as was done at Stewarts Point SMR.

or maybe a new option would be a "postage stamp" or "box" of usage to allow access to the approximately 2 miles of available ocean


Vizcaino SMCAs - Ruby 1&2, Sapphire 1&2
proposed SMCA
Sapphire 2
Sapphire 1
Middle Rock
Double Cone Rock
Soldier Frank
SOPER-WHEELER CO. LLC
Map_316
Vizcaino SMCAs
T23N R18W
T22N, R18W
Legend:
Ownership
Soper Company Ownership
Roads:
Hwy. 1
Usal Road
Scale: 1: 42,000 (1.5"/mile)
By: Ryan J. McKillop
7/9/2010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Rockport (47) gate
Double Cone Rock
Castaneva Needle
Rockport, CA 95488
Image USDA Farm Service Agency
© 2010 Google
© 2010 Europa Technologies
Image © 2010 DigitalGlobe
Google
Imagery Dates: Jun 22, 2003 - May 25, 2009
39°45'28.12" N 123°50'01.96" W elev 160 m
Eye alt 6.96 km

Submitted by Jim Martin Oct 25

WHEREAS, the California Marine Life Protection Act (MLPA) calls for the reexamination and redesign of California's Marine Protected Area (MPA) system to increase its coherence and effectiveness at protecting the state's marine life, habitat, and ecosystems; and

WHEREAS, it is consistent with the MLPA and good public policy to redesign California's MPA system in a manner that gives meaningful consideration to the sustainability of ecological, economic, cultural, and social systems; and

WHEREAS, North Coast fisheries are currently sustainable or rebuilding under existing regulations[1]; and

WHEREAS, recent scientific research has demonstrated that the California Current Ecosystem is one of the most conservatively managed ecosystems in the world[2]; and

WHEREAS, Mendocino County, Humboldt County and Del Norte County are classified as vulnerable to changes in fisheries management measures[3] due to factors such as high economic dependence on fishing, high community isolation, limited industry diversification, high unemployment, and high poverty rates; and

WHEREAS, the MLPA Initiative Regional Stakeholder Group unified during Round Three of the MLPA Initiative process to develop a consensus based MPA array (Unified MPA Array) that meets the goals of the MLPA while minimizing impacts to social, cultural, and economic systems; and

WHEREAS, we recognize that, due to significantly distinct ecological, social, cultural and economic conditions in the North Coast, the Unified MPA Array does not precisely meet all the guidelines established by the MLPA Initiative Science Advisory Team, yet represents an MPA network consistent with the spirit of those guidelines and the goals and elements identified in the MLPA legislation; and

WHEREAS, the long term success of MPAs will require acceptance by local communities; and although many community members do not believe any new MPAs are warranted, the Unified MPA Array represents a compromise acceptable to North Coast residents, including recreational fishermen, commercial fishermen and conservation advocates; and

WHEREAS, California Indian Tribes and Tribal Communities are traditional and active stewards of marine ecosystems, and their continued gathering and use of marine resources is an ongoing and essential part of their culture and survival.

---

[1] National Marine Fisheries Service. 2009. Our living oceans: report on the status of U.S. living marine resources, 6th edition. U.S. Dep. Commerce, NOAA Technical Memo. NMFS-F/SPO-80.

[2] Worm et al. 2009. Rebuilding Global Fisheries. Science 325: 578-585.

[3] Pacific Fishery Management Council and National Marine Fisheries Service. 2006. Proposed acceptable biological catch and optimum yield specifications and management measures for the 2007-2008 Pacific coast groundfish fishery, and Amendment 16-4: rebuilding plans for seven depleted Pacific coast groundfish species; final environmental impact statement including regulatory impact review and initial regulatory flexibility analysis. Pacific Fishery Management Council, Portland, Oregon, 2006.

NOW, THEREFORE, BE IT RESOLVED by the Salmon Restoration Association of Fort Bragg that we strongly urge the Marine Life Protection Act Initiative Blue Ribbon Task Force and the California Fish and Game Commission to support and adopt the Unified MPA Array developed by the Regional Stakeholder Group during Round 3 of the North Coast MLPA Initiative process.

BE IT FURTHER RESOLVED THAT if the Blue Ribbon Task Force makes the decision to redesign the Unified MPA Array contrary to the recommendation of the Salmon Restoration Association of Fort Bragg, then the redesign must be conducted in collaboration with North Coast Regional Stakeholders. Regional Stakeholders have worked for months to design a single cohesive array that incorporates the unique ecological, social, cultural and economic conditions of the North Coast within the framework of the statewide MLPA Initiative Guidelines and MLPA legislation. Because the alteration of any single element of the Unified MPA Array has the potential to undermine its cohesiveness, collaboration with Regional Stakeholders and local communities regarding any change to the Unified MPA Array is essential to retaining both its integrity and the support of local communities, factors that are vital to the long term success of the MPA system.

BE IT FURTHER RESOLVED THAT any approved MPA array design will need to allow traditional, non-commercial, gathering, subsistence, harvesting, ceremonial and stewardship activities by California Tribes and Tribal Communities.

Joe Janisch, President
Salmon Restoration Association
Fort Bragg, CA

September 21, 2010

CFC
CALIFORNIA
FISHERIES
COALITION

October 22, 2010

The Honorable Cindy Gustafson, Chair
Blue Ribbon Task Force, MLPAI
1416 Ninth Street, 13th Floor
Sacramento, California 95814

Dear Ms. Gustafson:

The California Fisheries Coalition, and each of its partner organizations, supports the Unified MPA Array for the North Coast MLPA region. Our Coalition has constructively participated in each region of the MPA adoption process always working collaboratively with all stakeholders in search of common ground to the *maximum degree possible.*

We are extremely pleased that our efforts and the efforts of all other stakeholders in the North Coast region have resulted in a complete consensus and a unified proposal for a regional MPA network. I think all will agree that such a widespread consensus is an historical event.

Stakeholders followed closely the generic guidelines laid out by the SAT and included necessary and appropriate consideration for the significantly unique ecological, social, cultural, and economic conditions of the North Coast. As we all know "one size" does not fit all situations or regions and acting otherwise defies logic, common sense, and good government.

We encourage the BRTF (and the Fish & Game Commission) to adopt the Unified MPA Array. However, if the Task Force feels some modifications to the Unified Array are necessary, we request it respect the hard work of the local stakeholder community and refer such needs to the stakeholders to further identify necessary changes, instead of simply directing staff to unilaterally develop alternatives.

Thank you for considering our request,

Sincerely,

Trustees -

Bob Bertelli
Bob Bertelli
CA Sea Urchin Commission

Jim Martin
Jim Martin
Recreational Fishing Alliance

Steve Scheiblauer
Steve Scheiblauer
Alliance of Communities for Sustainable Fisheries

Cc: Honorable James Kellogg, President of the Fish & Game Commission

1621-B Thirteenth Street, Sacramento, CA 95814 • Telephone (916) 444 - 8194

Adam Wagschal
+Brandi Easter
Oct. 25, 2010

List of entities that support adoption of the Unified MPA Proposal as of October 24, 2010

Local Government Resolution Endorsements

1. County of Mendocino
2. County of Humboldt
3. County of Del Norte
4. City of Monterey
5. City of Point Arena
6. City of Fort Bragg
7. City of Willits
8. City of Ukiah
9. City of Lakeport
10. City of Ferndale
11. City of Fortuna
12. City of Eureka
13. City of Arcata
14. City of Blue Lake
15. City of Trinidad
16. City of Crescent City
17. Shelter Cove Resort Improvement District
18. Humboldt Bay Harbor, Recreation and Conservation District
19. Crescent City Harbor District

Organization Resolution Endorsements

1. Recreational Fishing Alliance
2. Salmon Trollers Marketing Association
3. Humboldt Area Saltwater Anglers
4. Humboldt Fishermen's Marketing Association
5. Salmon Restoration Association of Fort Bragg
6. North Coast Fishing Association
7. Partnership for Sustainable Oceans
8. Sonoma County Abalone Network
9. San Diego Freedivers Club
10. Waterman's Alliance
11. Long Beach Neptunes

Other Supporters

1. The Yurok Tribe
2. Norcal Kayak Anglers
3. Los Angeles Fathomiers
4. Underwater Society of America
5. California Fisheries Coalition
6. The Audubon Society
7. Northcoast Environmental Center
8. The Ocean Conservancy
9. The Natural Resource Defense Council
10. Humboldt Baykeeper
11. CBN CAL

October 21, 2010

Blue Ribbon Task Force
Marine Life Protection Act Initiative
c/o California Natural Resources Agency
1410 Ninth Street Suite 1311
Sacramento, California 95814

Dear Blue Ribbon Task Force Members,

The Los Angeles Fathomiers is one of the oldest and most active dive clubs in Southern California. The club was organized in 1957 and currently has over 100 active members. Our club is primarily a freediving club devoted to the art of selective recreational spearfishing. We believe that the California coast is unique and precious. As members of the LA Fathomiers, we have a clearer appreciation of the ocean and its inhabitants by enjoying it firsthand. We hunt and gather with the utmost respect for the environment and the laws of the California Department of Fish and Game. We believe in active involvement with the legislative powers to help sustain our ocean habitats for generations to come.

The Los Angeles Fathomiers, through the efforts of its Conservation team and MLPA committee has been intensely involved with the MLPA initiative in Southern California and we have been following the north coast process carefully as many of our members recreate in these waters frequently during abalone season.

The Los Angeles Fathomiers strongly urges the Marine Life Protection Act Initiative Blue Ribbon Task Force and the California Fish and Game Commission to support and adopt the Unified MPA Array developed by the Regional Stakeholder Group during Round 3 of the North Coast MLPA Initiative process.

Sincerely,

Joseph N Farlo MD

Joseph Farlo MD
Los Angeles Fathomiers
Vice President and Conservation Officer

WHEREAS, the California Marine Life Protection Act (MLPA) calls for the reexamination and redesign of California's Marine Protected Area (MPA) system to increase its coherence and effectiveness at protecting the state's marine life, habitat, and ecosystems; and

WHEREAS, it is consistent with the MLPA and good public policy to redesign California's MPA system in a manner that gives meaningful consideration to the sustainability of ecological, economic, cultural, and social systems; and

WHEREAS, North Coast fisheries are currently sustainable or rebuilding under existing regulations[1]; and

WHEREAS, recent scientific research has demonstrated that the California Current Ecosystem is one of the most conservatively managed ecosystems in the world[2]; and

WHEREAS, Mendocino County, Humboldt County and Del Norte County are classified as vulnerable to changes in fisheries management measures[3] due to factors such as high economic dependence on fishing, high community isolation, limited industry diversification, high unemployment, and high poverty rates; and

WHEREAS, the MLPA Initiative Regional Stakeholder Group unified during Round Three of the MLPA Initiative process to develop a consensus based MPA array (Unified MPA Array) that meets the goals of the MLPA while minimizing impacts to social, cultural, and economic systems; and

WHEREAS, we recognize that, due to significantly distinct ecological, social, cultural and economic conditions in the North Coast, the Unified MPA Array does not precisely meet all the guidelines established by the MLPA Initiative Science Advisory Team, yet represents an MPA network consistent with the spirit of those guidelines and the goals and elements identified in the MLPA legislation; and

WHEREAS, the long term success of MPAs will require acceptance by local communities; and although many community members do not believe any new MPAs are warranted, the Unified MPA Array represents a compromise acceptable to North Coast residents, including recreational fishermen, commercial fishermen and conservation advocates; and

WHEREAS, California Indian Tribes and Tribal Communities are traditional and active stewards of marine ecosystems, and their continued gathering and use of marine resources is an ongoing and essential part of their culture and survival.

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[1] National Marine Fisheries Service. 2009. Our living oceans: report on the status of U.S. living marine resources, 6th edition. U.S. Dep. Commerce, NOAA Technical Memo. NMFS-F/SPO-80.

[2] Worm et al. 2009. Rebuilding Global Fisheries. Science 325: 578-585.

[3] Pacific Fishery Management Council and National Marine Fisheries Service. 2006. Proposed acceptable biological catch and optimum yield specifications and management measures for the 2007-2008 Pacific coast groundfish fishery, and Amendment 16-4: rebuilding plans for seven depleted Pacific coast groundfish species; final environmental impact statement including regulatory impact review and initial regulatory flexibility analysis. Pacific Fishery Management Council, Portland, Oregon, 2006.

NOW, THEREFORE, BE IT RESOLVED by the Watermen's Alliance that we strongly urge the Marine Life Protection Act Initiative Blue Ribbon Task Force and the California Fish and Game Commission to support and adopt the Unified MPA Array developed by the Regional Stakeholder Group during Round 3 of the North Coast MLPA Initiative process.

BE IT FURTHER RESOLVED THAT if the Blue Ribbon Task Force makes the decision to redesign the Unified MPA Array contrary to the recommendation of the Watermen's Alliance, then the redesign must be conducted in collaboration with North Coast Regional Stakeholders. Regional Stakeholders have worked for months to design a single cohesive array that incorporates the unique ecological, social, cultural and economic conditions of the North Coast within the framework of the statewide MLPA Initiative Guidelines and MLPA legislation. Because the alteration of any single element of the Unified MPA Array has the potential to undermine its cohesiveness, collaboration with Regional Stakeholders and local communities regarding any change to the Unified MPA Array is essential to retaining both its integrity and the support of local communities, factors that are vital to the long term success of the MPA system.

BE IT FURTHER RESOLVED THAT any approved MPA array design will need to allow traditional, non-commercial, gathering, subsistence, harvesting, ceremonial and stewardship activities by California Tribes and Tribal Communities.

Volker Hoehne, Founding Member and President
Watermen's Alliance
San Diego, CA

WHEREAS, the California Marine Life Protection Act (MLPA) calls for the reexamination and redesign of California's Marine Protected Area (MPA) system to increase its coherence and effectiveness at protecting the state's marine life, habitat, and ecosystems; and

WHEREAS, it is consistent with the MLPA and good public policy to redesign California's MPA system in a manner that gives meaningful consideration to the sustainability of ecological, economic, cultural, and social systems; and

WHEREAS, North Coast fisheries are currently sustainable or rebuilding under existing regulations[1]; and

WHEREAS, recent scientific research has demonstrated that the California Current Ecosystem is one of the most conservatively managed ecosystems in the world[2]; and

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WHEREAS, the MLPA Initiative Regional Stakeholder Group unified during Round Three of the MLPA Initiative process to develop a consensus based MPA array (Unified MPA Array) that meets the goals of the MLPA while minimizing impacts to social, cultural, and economic systems; and

WHEREAS, we recognize that, due to significantly distinct ecological, social, cultural and economic conditions in the North Coast, the Unified MPA Array does not precisely meet all the guidelines established by the MLPA Initiative Science Advisory Team, yet represents an MPA network consistent with the spirit of those guidelines and the goals and elements identified in the MLPA legislation; and

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WHEREAS, California Indian Tribes and Tribal Communities are traditional and active stewards of marine ecosystems, and their continued gathering and use of marine resources is an ongoing and essential part of their culture and survival.

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[2] Worm et al. 2009. Rebuilding Global Fisheries. Science 325: 578-585.

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NOW, THEREFORE, BE IT RESOLVED by the San Diego Freedivers that we strongly urge the Marine Life Protection Act Initiative Blue Ribbon Task Force and the California Fish and Game Commission to support and adopt the Unified MPA Array developed by the Regional Stakeholder Group during Round 3 of the North Coast MLPA Initiative process.

BE IT FURTHER RESOLVED THAT if the Blue Ribbon Task Force makes the decision to redesign the Unified MPA Array contrary to the recommendation of the San Diego Freedivers, then the redesign must be conducted in collaboration with North Coast Regional Stakeholders. Regional Stakeholders have worked for months to design a single cohesive array that incorporates the unique ecological, social, cultural and economic conditions of the North Coast within the framework of the statewide MLPA Initiative Guidelines and MLPA legislation. Because the alteration of any single element of the Unified MPA Array has the potential to undermine its cohesiveness, collaboration with Regional Stakeholders and local communities regarding any change to the Unified MPA Array is essential to retaining both its integrity and the support of local communities, factors that are vital to the long term success of the MPA system.

BE IT FURTHER RESOLVED THAT any approved MPA array design will need to allow traditional, non-commercial, gathering, subsistence, harvesting, ceremonial and stewardship activities by California Tribes and Tribal Communities.

Volker Hoehne, President
San Diego Freedivers Diving Club
A dive club with over 150 active members in San Diego, CA
San Diego, CA

Central California Council of Diving Clubs, Inc.

P.O. BOX 779, DALY CITY, CA 94017

October 24, 2010

BY E-MAIL & US MAIL
Ms. Cindy Gustafson, Chair
MLPA Blue Ribbon Task Force
Marine Life Protection Act Initiative
c/o California Resources Agency
1416 9th Street, #1311
Sacramento CA 95814

Re: **Northern California Regional Stakeholder Group (NCRSG) Unified Proposal**

Dear Ms. Gustafson:

I am writing on behalf of the Central California Council of Diving Clubs (CEN CAL), an organization that represents skin and SCUBA divers throughout northern and central California, including many on the north coast. CEN CAL has actively followed the lengthy negotiations and hard work that went into creating the Unified Marine Protected Array proposal that was developed for the North Coast region through negotiations among all the stakeholders. CEN CAL strongly supports the unified proposal as it currently exists and requests that it be adopted without further changes or modifications.

Sincerely yours,

James L. Kaller,
Acting President

JLK/hm
cc: CEN CAL Board

LONG BEACH NEPTUNES RESOLUTION TO SUPPORT THE UNIFIED MARINE PROTECTED AREA ARRAY

WHEREAS, the California Marine Life Protection Act (MLPA) calls for the reexamination and redesign of California's Marine Protected Area (MPA) system to increase its coherence and effectiveness at protecting the state's marine life, habitat, and ecosystems; and

WHEREAS, it is consistent with the MLPA and good public policy to redesign California's MPA system in a manner that gives meaningful consideration to the sustainability of ecological, economic, cultural, and social systems; and

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WHEREAS, recent scientific research has demonstrated that the California Current Ecosystem is one of the most conservatively managed ecosystems in the world[2]; and

WHEREAS, Mendocino County, Humboldt County and Del Norte County are classified as vulnerable to changes in fisheries management measures[3] due to factors such as high economic dependence on fishing, high community isolation, limited industry diversification, high unemployment, and high poverty rates; and

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WHEREAS, the long term success of MPAs will require acceptance by local communities; and although many community members do not believe any new MPAs are warranted, the Unified MPA Array represents a compromise acceptable to North Coast residents, including recreational fishermen, commercial fishermen and conservation advocates; and

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[2] Worm et al. 2009. Rebuilding Global Fisheries. Science 325: 578-585.
[3] Pacific Fishery Management Council and National Marine Fisheries Service. 2006. Proposed acceptable biological catch and optimum yield specifications and management measures for the 2007-2008 Pacific coast groundfish fishery, and Amendment 16-4: rebuilding plans for seven depleted Pacific coast groundfish species; final environmental impact statement including regulatory impact review and initial regulatory flexibility analysis. Pacific Fishery Management Council, Portland, Oregon, 2006.

LONG BEACH NEPTUNES RESOLUTION TO SUPPORT THE UNIFIED MARINE PROTECTED AREA ARRAY

WHEREAS, California Indian Tribes and Tribal Communities are traditional and active stewards of marine ecosystems, and their continued gathering and use of marine resources is an ongoing and essential part of their culture and survival.

NOW, THEREFORE, BE IT RESOLVED by the Long Beach Neptunes that we strongly urge the Marine Life Protection Act Initiative Blue Ribbon Task Force and the California Fish and Game Commission to support and adopt the Unified MPA Array developed by the Regional Stakeholder Group during Round 3 of the North Coast MLPA Initiative process.

BE IT FURTHER RESOLVED THAT if the Blue Ribbon Task Force makes the decision to redesign the Unified MPA Array contrary to the recommendation of the Long Beach Neptunes, then the redesign must be conducted in collaboration with North Coast Regional Stakeholders. Regional Stakeholders have worked for months to design a single cohesive array that incorporates the unique ecological, social, cultural and economic conditions of the North Coast within the framework of the statewide MLPA Initiative Guidelines and MLPA legislation. Because the alteration of any single element of the Unified MPA Array has the potential to undermine its cohesiveness, collaboration with Regional Stakeholders and local communities regarding any change to the Unified MPA Array is essential to retaining both its integrity and the support of local communities, factors that are vital to the long term success of the MPA system.

BE IT FURTHER RESOLVED THAT any approved MPA array design will need to allow traditional, non-commercial, gathering, subsistence, harvesting, ceremonial and stewardship activities by California Tribes and Tribal Communities.

Steve Parkford
President
Long Beach Neptunes
Founded in 1952
Oldest active free diving club in USA
Long Beach, Califorinia

Dear Blue Ribbon task force,

I Live in McKinleyville California and I Support the marine protection of the North Coast because we need to take a conscience Stand and Act of of environments current state. This Movement would help in incredible ways for our sea life and it's also a very good comprimise for the fisherman and our sea food supply. Overall this would be the best way of action in the long and short term.

By setting aside a few key areas, we can protect sensitive ocean habitats while leaving the vast Majority of Coastal waters open for fisking and other uses.

Please support the unified Community proposal for a science-based, community oriented marine protected area network along the North Coast.

Mackenzie Hunter
1728 Anderson
McKinleyville CA, 95519

Oct 23rd, 2010

Dear Blue Ribbon Task Force,

As a 12 year resident of Humboldt County I support the creation of MPA's as long as the food gathering done by native indigenous people is not curtailed. The health of our Ocean directly effects the quality of life for many in our area. Our economic and ecological survival depends on the bounty of nature, which has been severely degraded by human activities including over-fishing. Protecting key areas is a necessary step in recovering our fish populations. Please support the unified community proposal for a science-based, community-oriented marine protected area network along the North Coast.

Sincerely, Jeremy Jensen

P.O. Box 4803
Arcata, Ca 95512

Dear Blue Ribbon Task Force:

As a resident of Humboldt Co.,

I am writing to let you know that I support creating a network of marine protected areas on the North Coast because the coast is the ocean not only a vitally important part of the North Coast Economy, but a huge key to our quality of life. Also, marine protected areas will help boost fish size, hence number of offspring, which will replenish the waters inside & outside of their boundaries.

Please ~~support~~ ~~ask the Task Force to support~~ support the unified community proposal for a science-based, community-oriented marine protected area network along to North Coast

Thank you,

Cheryl Thurman

988 9th St.
Arcata, CA
95521

Submitted by Lisa (NEC)

SUPPORT MARINE PROTECTED AREAS IN CALIFORNIA

Dear Members of the Blue Ribbon Task Force:

We, the undersigned, support the Marine Life Protection Act and urge you to support the single community network of marine protected areas developed by conservationists, fishermen, and tribal representatives.

North coast stakeholders have created an ocean protection plan that is truly built on community input. Please help create a legacy of ocean conservation for northern California that promises to sustain a healthy ocean and a successful fishing industry for decades to come.

Thank you for your work to support the protection of healthy oceans for our kids and grandkids.

Name (please print)	County of Residence	Contact Email
Justin Reeve	Humboldt	
Caitlin McKee	Humboldt	
Mitchell Snowden	Humboldt	

Name (please print)	County of Residence	Contact Email
William Spencer	Humboldt	wrspencer@sbcglobal.net OR wrspencer@sbcglobal.net
Jennifer Fowler	Humboldt	curtis.jenn@gmail.com
Austin Ballard	Mendo	austin.the.pie@gmail.com
Phoebe Morgan	Mendo	
Steve Selly	El Dorado	sselly@sbcglobal.net
Abraham M David	Humboldt	
Richard Lyttle	Humboldt	
Tamarie Ryder	Humboldt	
Ryan Lee	Humboldt	
Laura Latimer	Nevada	laura.latimer@att.net
Ed Gray	Nevada	ewg2_96161@yahoo.com
Trevor Griffith	Multnoma	
Robin M. Donald	Humboldt	2forehead@yahoo.com
Elizabeth Cortez	Humboldt	ec121@humboldt.edu

Name (please print)	County of Residence	Contact Email
David Price	U.S.A. / Indonesia	anura@wbt.org
BRENDA FORD	Humboldt	[illegible]
Brett Shuler	Humboldt	shunade@sbcglobal.net
Niladri Sherman	Humboldt	Niladri108@hotmail.com
Devin Fredericksen	Humboldt	
Helen Upin		
Palmer Harrell	Humbolt	Geekpleez@gmail.com
Kachina Rowland	Humboldt	KLR71@humboldt.edu
Mattasyn Hunter	Humboldt	gofly_75@yahoo.com
Adam Mussell	Humboldt	Adam.mussell@gmail.com
[illegible]	Humboldt	Anasazigold@gmail.com
Jason [illegible]	Humbolt	wildspiritlove@gmail
James R Walker	Humboldt	
Joel Benegar	Humboldt	jrbenegar@yahoo.com

Name (please print)	County of Residence	Contact Email
Cody Henriksen	Humboldt	
Gabriel Paarmann	Humboldt	
Sean Gill	Humboldt	
Kara Merritt	Humboldt	
Hayley Aronson	Humboldt	hla17@humboldt.edu
Josh Frankle	Humboldt	jff6@hsu
Jessica Allison	Humboldt	ja106@humboldt.edu
Shanon Radtkey	Humboldt	rdr28@humboldt.edu
Robin Halloran	Humboldt	Halloran.robin@yahoo.com
Mike Romano	Humboldt	msr21@humboldt.edu
Jennifer Hidalgo	Humboldt	jennifer.hidalgo@yanoo.com
Bret Jacobson	Humboldt	—
Lee-Roy Haarhaus	Humboldt	Lh58@humboldt.e

Name (please print)	County of Residence	Contact Email
Tyler Ladirsky	Humboldt	tcl17@humboldt.edu
Sarah Brutzman	Humboldt	syrahh.bee@gmail.com
Nancy Lopez	Humboldt	ntl7@humboldt.c
Brenda Urueta	Humboldt	
Samuel J. Harkins	Humboldt	samharkins@gmail.com
Sara L Haney	Humboldt	mrf35@humboldt.edu
MOLLY FISCHER	HUMBOLDT	
Lee Bell	Humboldt	lcb33@humboldt.edu
D Lee Carey	Humboldt	dr134@humboldt.edu

Name (please print)	County of Residence	Contact Email
Jenny Mayberry	Humboldt	
Melissa Dunne	Humboldt	humdababy10@yahoo.com

YUROK TRIBE

190 Klamath Boulevard • Post Office Box 1027 • Klamath, CA 95548

October 20, 2010

Ms. Cindy Gustafson, Chair
Blue Ribbon Task Force
c/o Marine Life Protection Act
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Dear Ms. Gustafson:

The Yurok Tribe wants to thank each of you for the considerable time and effort you have spent developing the Marine Life Protection Act Initiative (MLPA) process. We understand these efforts, are to create a network of Marine Protected Areas for the environmental benefit of all citizens. We also want to thank the Resource Legacy Fund Foundation for funding the MLPA process.

As you are aware, the Yurok Tribe has been actively involved in the MLPA process on the north coast and the Yurok Tribe experience has been extremely challenging for many reasons. Now that you are at the cusp of recommending a MPA proposal to the California Fish and Game Commission for consideration, the Yurok Tribe would like to share with you our distinct tribal governmental perspective.

The Yurok Tribe remains puzzled that the tribal government which represents the largest tribe in California was never allowed to engage with the Science Advisory Team (SAT) in a meaningful or productive manner. We find the Levels of Protection (LOP) model for estimating recreational take is extremely inaccurate throughout the North Coast Group area and places an unfair and disproportionate burden on Native American peoples. Science decisions based upon the submittal of data are more informed than those made without the benefit of data. For example, we do not understand why data produced by surveys of mussel beds within Yurok Ancestral territory and reports commissioned from marine scientists could not be considered. It is also unclear why traditional ecological knowledge was never properly incorporated into the SAT despite the direction to do so by the Department of Fish and Game. Unfortunately, this approach undermines effective policy making between the State of California and Tribal government.

The Yurok Tribe, of course, reserves all jurisdictional rights. As you are aware direct support of any MLPA proposal requires by its nature, a waiver of sovereignty. At the same time, we believe the Unified MLPA Array proposal developed by the Regional Stakeholder Group maintains the clear understanding that there should be support for traditional non-commercial harvesting by California Tribes and Tribal communities and opportunities for co-management. This is the essential and strongest recommendation you can make to the California Fish and Game Commission. This unified proposal not only demonstrates cross-interests on the north coast coming together but is the best balance of the proposed options currently under consideration. Our support is with the clear understanding that there will be avoidance for traditional Native American harvesting. This understanding was affirmed by 30 of the 32 members of the Regional Stakeholder Group (documentation attached).

> *"Tribal traditional subsistence, ceremonial, religious, spiritual, and other customary uses of marine resources within the North Coast are intrinsically beneficial to marine ecological functions and are consistent with the goals of the Marine Life Protection Act.*
>
> *There must be avoidance of all areas of non-commercial Tribal subsistence, ceremonial, religious, spiritual, and other customary uses.*
>
> *There is an unequivocal reservation by the Tribes and Tribal communities of all of their inherent traditional rights in this process.*
>
> *Tribal rights cannot be ignored, diminished or compromised by the State or the MLPA Initiative.*
>
> *There should be formal recognition by the State in the MLPA process of a unique category of "Tribal Use", which is distinct from the "Commercial" or "Recreational" categories.*
>
> *Large areas are already protected by low population densities, the lack of vehicular access, restricted pedestrian trail access, steep topography, dangerous cliffs, large shoreline boulders, and low visibility."*

We are fully aware that legislation or direct agency action may be needed to allow a separate "Tribal Use" category. The "Tribal Use" category would be for traditional, subsistence, ceremonial, religious, spiritual, and other customary uses of marine resources. We appreciate your continued policy support for such legislative and/or agency action after the commencement of the Initiative process.

We also express optimism that the Federal Marine Sanctuary efforts initiated by the Tribe nearly three years ago will continue after completion of the California State MLPA process. These federal/state tribal cooperative efforts will be complimented by a

Yurok Tribal management plan for the intertidal reaches within Yurok Ancestral territory. While we cannot speak for any other Tribe we hope to share our plan with the other Tribes.

In closing, the Yurok Tribe has a heartfelt appreciation for the tremendous level of community support we have received at all governmental levels in the North Coast for the preservation of our way of life and for the policy guidance you have provided to date regarding Tribal uses. Hopefully, our collective efforts will continue to demonstrate a will to acknowledge and respect the continuance of the Yurok lifestyle, and for that we are thankful.

Sincerely,

Marjorie Buckskin

Marjorie Buckskin
Vice-Chairman

Enclosures: Stakeholder signature Petition
Newspaper
Notthoff letter

North Coast Regional Stakeholder Group Findings
July 29-30, 2010

- Tribal traditional subsistence, ceremonial, religious, spiritual, and other customary uses of marine resources within the North Coast are intrinsically beneficial to marine ecological functions and are consistent with the goals of the Marine Life Protection Act.

- There must be avoidance of all areas of non-commercial Tribal subsistence, ceremonial, religious, spiritual, and other customary uses.

- There is an unequivocal reservation by the Tribes and Tribal communities of all of their inherent traditional rights in this process.

- Tribal rights cannot be ignored, diminished or compromised by the State or the MLPA Initiative.

- There should be formal recognition by the State in the MLPAI process of a unique category of "Tribal Use", which is distinct from the "Commercial" or "Recreational" categories.

- Large areas are already protected by low population densities, the lack of vehicular access, restricted pedestrian trail access, steep topography, dangerous cliffs, large shoreline boulders, and low visibility waters.

- To ensure safety, a ten mile buffer around harbors shall be affirmed.

- Oil, gas wave, and wind energy development or associated slant drilling should be disallowed within all of the MPAs.

The following members of the North Coast Regional Stakeholder Group affirm the above findings with their signatures below.

James Bassler — NO on 2nd para.

Bruce Campbell

Steve Chaney

Russ Crabtree

Greg Dale — w/exception of Flatfish

John Dixon — I support bullets 3-5 for Tribal rights

Henry "Ben" Doane

Brandi Easter

Don Gillespie

Benjamin Henthorne

Jacque Hostler

Robert Jamgochian

Dave Jensen

Tim Klassen

Larry Knowles

Zach Larson

William Lemos

Kevin McGrath

Kevin McKernan

Aaron Newman

Pete Nichols

Charlie Notthoff — MINUS FINAL POINT

Megan Rocha

Jennifer Savage

Valerie Stanley

Atta Stevenson

Thomas Trumper

Adam Wagshcal (with exception of last bullet)

Rob Wakefield

Reweti Wiki

David Wright

Richard Young

* Rob Wakefield - I support Tribal Uses but as an RSC member don't feel I have ability to change regulation or legislation RW

Oct. 13, 2010 McKinleyville Press

Public Opinion on MLPA Sought

By Daniel Mintz
PRESS STAFF WRITER

A federally-funded surveying effort will gauge public opinion the effectiveness of the decision-making process behind the Marine Life Protection Act.

Described at the Oct. 5 Board of Supervisors meeting, the survey is being conducted by the Massachusetts-based Social and Environmental Research Institute and will finish on Oct. 21.

Brion Van Over of the Institute told supervisors that MLPA implementation was chosen for a public survey because of its significance to the community.

"It's important that we get this sort of stuff right – there's a lot of people involved in this and it's going to affect not only the environment but local socio-economic conditions all up and down the coast," he said.

The Institute wants to find out if people think the process is working and has been done fairly and competently, Van Over continued.

Anyone can participate in the survey and many respondents are needed to ensure "statistical certainty," he said. Participation is anonymous.

To fill out a survey online, go to www.northcoastsurvey.org.
Paper copies are available by mail on request and are also at the Eureka, Fortuna and Arcata library branches.

Another survey will be conducted after a Blue Ribbon Task Force makes final recommendations to the state's Fish and Game Commission. The Task Force will do that at the end of this month.

Some feedback was offered during the meeting. Representing the Yurok tribe, John Corbett said the MLPA process has been effective in some ways but lacking in others.

"From our perspective, probably the biggest difficulty was the shift from a federal marine resource process that was based on collaboration and recognizing all governments to one that did not recognize Indian governments," he told supervisors.

Members of Native American tribes have objected to the MLPA process and the state's refusal to exclude longstanding tribal marine uses from its restrictions.

NOTTHOFF UNDERWATER SERVICE
2109 Stevens Way
McKinleyville, CA 95519
(707) 839-8871

August 27, 2010

Tribal Council Chairperson Thomas O'Rourke.
Yurok Tribe
P.O. Box 1027
Klamath, CA 95548

Subject: Ocean Conditions on California's North Coast

Mr. O'Rourke,

I have been teaching scuba classes and diving professionally in Humboldt, Del Norte, and Mendocino Counties since 1978, and recreationally since 1973. During that time, I have made over 4000 dives in various locations including Cape Mendocino, Patrick's Point, and Humboldt Bay. Due in part to this experience, I was nominated and served as a member of California Marine Life Protection Act's North Coast Regional Stakeholders' Group.

The northern California coast, particularly north of Cape Mendocino presents unique challenges for those who dive or access the ocean in this region. Due to these challenging conditions, pressure from divers on resources in this region is minimal.

Our near-shore area is heavily affected by silt from the Eel, Mad, and Klamath Rivers. This substrate combined with frequent high surf seriously limits underwater visibility most of the year. Periodic upwelling of deep ocean waters brings nutrients to shallower waters. Plankton blooms are triggered when these nutrient-rich waters encounter sunlight, further reducing visibility.

Many of my working dives are made in visibility of 1 foot or less. Due to these long periods of poor visibility, most divers choose to dive elsewhere. Those who choose to dive along the north coast, do so only during short periods of calm clearer water.

Large portions of this coast are only accessible by boat and then only on calmer days. The small number of divers capable of reaching these areas during limited windows of opportunity impact ocean resources minimally.

These challenging ocean conditions along California's north coast provide significant protection for ocean resources.

Thank you for your time,

Charlie Notthoff
National Association of Underwater
Instructors #5174L

Submitted by Jim Martin

R R E D C

Redwood Region
Economic Development
Commission

RESOLUTION NUMBER 10-01

A RESOLUTION ENDORSING THE UNIFIED MARINE PROTECTED AREA ARRAY

WHEREAS, the California Marine Life Protection Act (MLPA) calls for the reexamination and redesign of California's Marine Protected Area (MPA) system to increase its coherence and effectiveness at protecting the state's marine life, habitat, and ecosystems; and

WHEREAS, it is consistent with the MLPA and good public policy to redesign California's MPA system in a manner that gives meaningful consideration to the sustainability of ecological, economic, cultural, and social systems; and

WHEREAS, North Coast fisheries are currently sustainable or rebuilding under existing regulations[1]; and

WHEREAS, recent scientific research has demonstrated that the California Current Ecosystem is one of the most conservatively managed ecosystems in the world[2]; and

WHEREAS, Mendocino County, Humboldt County and Del Norte County are classified as vulnerable to changes in fisheries management measures[3] due to factors such as high economic dependence on fishing, high community isolation, limited industry diversification, high unemployment, and high poverty rates; and

WHEREAS, the MLPA Initiative Regional Stakeholder Group unified during Round Three of the MLPA Initiative process to develop a consensus based MPA array (Unified MPA Array) that meets the goals of the MLPA while minimizing impacts to social, cultural, and economic systems; and

WHEREAS, we recognize that, due to significantly distinct ecological, social, cultural and economic conditions in the North Coast, the Unified MPA Array does not precisely meet all the guidelines established by the MLPA Initiative Science Advisory Team, yet represents an MPA network consistent with the spirit of those guidelines and the goals and elements identified in the MLPA legislation; and

WHEREAS, the long term success of MPAs will require acceptance by local communities; and although many community members do not believe any new MPAs are warranted, the Unified MPA Array represents a compromise acceptable to North Coast residents, including recreational fishermen, commercial fishermen and conservation advocates; and

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[1] National Marine Fisheries Service. 2009. Our living oceans: report on the status of U.S. living marine resources, 6th edition. U.S. Dep. Commerce, NOAA Technical Memo. NMFS-F/SPO-80.
[2] Worm et al. 2009. Rebuilding Global Fisheries. Science 325: 578-585.
[3] Pacific Fishery Management Council and National Marine Fisheries Service. 2006. Proposed acceptable biological catch and optimum yield specifications and management measures for the 2007-2008 Pacific coast groundfish fishery, and Amendment 16-4: rebuilding plans for seven depleted Pacific coast groundfish species; final environmental impact statement including regulatory impact review and initial regulatory flexibility analysis. Pacific Fishery Management Council, Portland, Oregon, 2006.

WHEREAS, California Tribes and Tribal Communities are traditional and active stewards of marine ecosystems, and their continued gathering and use of marine resources is an ongoing and essential part of their culture and survival

NOW, THEREFORE, BE IT RESOLVED by the Redwood Region Economic Development Commission that we strongly urge the Marine Life Protection Act Initiative Blue Ribbon Task Force and the California Fish and Game Commission to support and adopt the Unified MPA Array developed by the Regional Stakeholder Group during Round 3 of the North Coast MLPA Initiative process.

BE IT FURTHER RESOLVED THAT if the Blue Ribbon Task Force makes the decision to redesign the Unified MPA Array contrary to the recommendation of the Redwood Region Economic Development Commission, then the redesign must be conducted in collaboration with North Coast Regional Stakeholders and communities. Regional Stakeholders have worked for months to design a single cohesive array that incorporates the unique ecological, social, cultural and economic conditions of the North Coast within the framework of the statewide MLPA Initiative guidelines and MLPA legislation. Because the alteration of any single element of the Unified MPA Array has the potential to undermine its cohesiveness, collaboration with Regional Stakeholders and local communities regarding any change to the Unified MPA Array is essential to retaining both its integrity and the support of local communities, factors that are vital to the long term success of the MPA system.

BE IT FURTHER RESOLVED THAT any approved MPA array design will need to allow traditional, non-commercial, gathering, subsistence, harvesting, ceremonial and stewardship activities by California Tribes and Tribal Communities.

PASSED AND ADOPTED by the Board of Directors of the Redwood Region Economic Development Commission at a duly called meeting held on the 25th day of October 2010, by the following polled vote:

AYES: HOLMES, LOVELACE, SCOLARI, STILLMAN, WILSON, ZANZI, ROGERS, ROSS, MAXWELL, COMBS, DUNKER, RUPP, ATKINS

NOES:

ABSENT: DENGLER

Tyler Holmes, Chair
Board of Directors

ATTEST:

Gregg Foster, Secretary
Board of Directors

Yurok Native Science, Harvesting, and Conservation

Dr. Jeanine M. Pfeiffer with Megan Rocha, Robert McConnell, Sr., and the Yurok Tribe

October 20, 2010: DRAFT

1. Introduction: the unique strengths of Yurok culture for the stewardship of marine resources

"...[W]here traditional societies have co-existed with their ecosystems for a long time, there is strong evidence that this is not explainable solely in terms of low numbers of people or low-impact technology. The accumulation of evidence, especially in the last two decades or so, indicates that some indigenous groups have resource-use practices that suggest a sophisticated understanding of ecological relationships and dynamics." (Berkes and Berkes 2009:6)

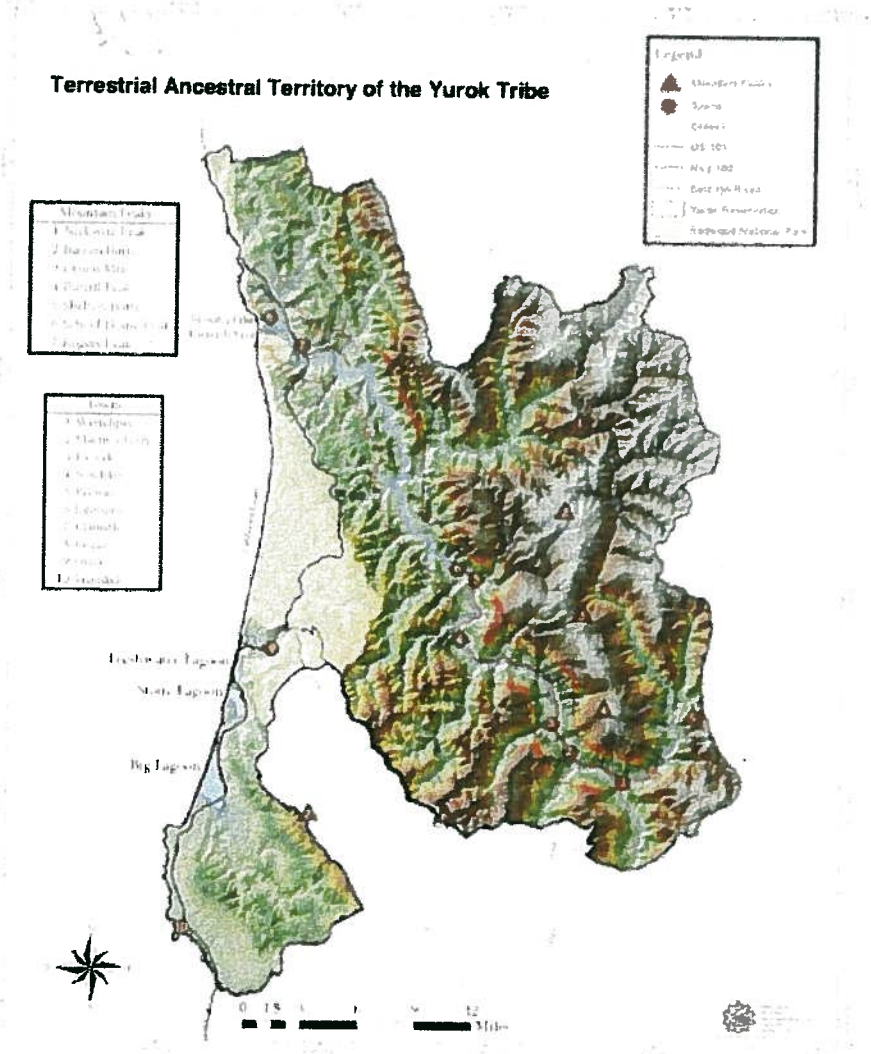

Figure 1: Terrestrial Ancestral Lands of the Yurok Tribe

The Yurok are the largest Tribe in California; continuously occupying, using, and stewarding coastal and marine resources for millennia along the entire coast and offshore waters of their Ancestral Territory, stretching from Little River to Damnation Creek[1] (Figure 1). Early and modern ethnographers describe the Yurok as one of the most complex and sophisticated societies in the Pacific Northwest, holders of "scientific knowledge of natural resources in their territories" and inventors of "ecologically adapted social mechanisms specific to each environment" (Bean 1992:303). Despite having never ceded their tribal sovereignty, since the era of EuroAmerican incursions, the Yurok have struggled to retain comprehensive traditional access, use, managerial, decision-making, and cultural continuity rights; rights guaranteed under the 2007 United Nations Declaration for the Rights of Indigenous Peoples.

[1] This area "includes the Lower Klamath River and tributary watersheds, high country, coast and lagoons from Little River to Damnation Creek, and off this coastline the entire ocean west to the horizon. In addition to the Yurok coastal lands, Yurok Ancestral Territory extends inland along the Klamath River from the mouth of the river at Requa to the confluence of Slate Creek and the Klamath River" (Yurok Tribe 2010b:3,4).

Indigenous population densities at the time of European contact along the Northwest Coast (28.30/100 km2)[2] were historically estimated at much higher densities than populations characterized by complex agricultural societies in the American Southwest (10.70/100 km2) or the Eastern Woodlands (6.95/100 km2) (Lightfoot 1993:184). Early estimations of Yurok Tribe population density counted 178 /100 km2 (Hunn 1994). Current population figures show 707 people living on 492,327 acres (255 km2) within Yurok Ancestral Territory, at a density of 277/100 km2 (Yurok Tribal Enrollment Office, 2010). These population densities are sufficiently high to have caused widespread depletion of 130 culturally important species pertaining to marine, coastal, estuarine, and lagoon ecosystems that are historically and currently wild-harvested by the Yurok tribe. Yet this has not happened. Researchers note that "pre-contact indigenous technology was fully capable of wiping out natural resources many times over" (Anderson 1996, cited in Haggan et al. 2006). Given this inherent capacity for overexploitation, how did/do such relatively high population densities sustainably coexist with marine resources?

From the initial point of Western contact with Native peoples, scant attention has been paid by government agencies, researchers, and academic institutes to the stewardship role of tribal communities within their ancestral landscapes and seascapes. Yet the stereotypical view of Native tribes as subsistence hunter-gatherers living blithely in naturally abundant ecosystems (or the opposite view of aboriginal peoples as the perpetrators of widespread species extinctions) has been thoroughly challenged in the scientific literature. Scholars of anthropology, archaeology, conservation and fisheries biology, cultural studies, economics, environmental science, ethnobiology, geography, history and human ecology (among other disciplines) have documented complex, resilient networks of social institutions and adaptive technologies enacted by hundreds of tribes and tribal communities along the Pacific Northwest coast since the earliest known records of human habitation (Kroeber 1923, Suttles 1968, Ames and Maschner 1999, Johnson 2001, Trosper 2002). Northwest coast peoples have repeatedly been credited by scholars with attaining "the highest known levels of coastal complexity achieved on a food-gathering base and among the highest known levels of population density" (Suttles 1986:56).

Native communities successfully applied adaptive resource management for millenia via a combination of deeply-held belief systems and sophisticated resource utilization and management technologies, augmented by early accumulation, transfer, and application of scientific knowledge. Political stability, social reciprocity, and regional exchange systems enabled tribal members in the Northwest to sustainably co-exist with the natural environment, each other, neighboring, and far-reaching societies within the culturally and biologically diverse Northwest California landscape.

Campbell and Butler's review of the archaeological evidence for Pacific Northwest salmon (*Oncorhynchus* spp.) shows population resilience for ~ 7500 years due to "beliefs and social institutions (including ownership, regulation, rituals, and monitoring) that placed restraints on salmon use as a common pool resource" (2010:17).

Across the Pacific Northwest, indigenous communities harvested, celebrated, and conserved coastal marine resources for centuries prior to the arrival of EuroAmerican settlers. The creation stories of the Yurok and many other tribes and tribal communities are connected to the Coast, and the First Salmon Ceremony was, and is, the most widely-practiced and uniformly sacred regulatory mechanism for native biota in the history of the continental United States. In past centuries through to the present, Native American ritual leaders managed resource collection and distribution strategies in "[the] most equitable and efficient [manner] for a given resource's productive capacity in a particular area (Bean 1992:307). According to Johnson, "[r]elying on customary law enforced by sophisticated reciprocity relationships," Northwest coast tribes established and maintained relatively stable rights and salmon stocks for "nearly ten thousand years of sustained abundance in the Pacific salmon fishery" (2001:2). Haggan et al. conclude that: "First Nations contributed to the spread of salmon throughout the Pacific Northwest and to increasing the complexity of habitats throughout their extensive tribal

[2] California coast populations overall during that time period were estimated at 43.30/100km2.

territories. This, in turn, created a more stable food supply contributing to social and cultural development" (2006: Abstract).

Territorialized, flexible resource use along the Pacific Northwest Coast was adapted to regional and seasonal scarcity (Ibid.); while "the ethic of sharing and community-wide distribution" and harvesting constraints "converted an open-access resource into a common-pool resource" (Campbell and Butler 2010) and prevented a purely exploitative, or accumulation-based approach. For at least seven thousand years, hundreds of marine and terrestrial aquatic species have been harvested rotationally by Native peoples maintaining permanent and semi-permanent access sites along the coast (Ibid). Strong resource management traditions sustained, and still sustain, relatively large, sedentary indigenous populations along the Pacific Northwest coastline.

This paper reports on a semi-exhaustive archival literature review of texts containing ethnoecological analyses of indigenous marine resource harvesting practices vis-à-vis other environmental and anthropogenic stressors in the Pacific Northwest, using the University of California Melvyl library database, Web of Science, JSTOR, and Google Scholar. Hundreds of formal publications and informal reports were acquired and processed until significant levels of citation triangulation were reached, i.e, no new publications were listed on the search engines.

"The debates nearly always boil down to arguments over the relative importance of two factors: human overexploitation/predation on the one hand, and environmental (e.g., natural climate and ecological) change on the other." (Rick et al. 2008:88)

It is beyond the scope of this paper to resolve the question of the relative importance of anthropogenic versus environmental factors on changes in marine resources in localized settings – this ongoing, highly complex debate involving a wide range of scientists is unlikely to be answered in the current decade. Instead, we address the question, *How can Native peoples and Native science contribute to coastal marine conservation?* through a brief comparative review of Native science, harvesting and conservation practices and a discussion of non-Native anthropogenic pressures in the Pacific Northwest region for the past 50-100 years.

Our review serves four purposes: (1) it provides a qualitative, historically-based understanding of the foundation of Native science, harvesting, and conservation in the Pacific Northwest; (2) it tracks indigenous harvesting pressure and conservation practices through the archaeological and historical record; (3) it describes the intrinsic, mutually interdependent relationship between the conservation of marine resources and the long-term viability of Native cultures; and (4) it demonstrates the quantitative differences between limited-scale Native harvesting and large-scale commercial harvesting practices within the larger context of more significant and widespread anthropogenic pressures including, but not limited to: water diversion, real estate development, industrial pollution, international commercial fisheries, and ocean warming and acidification.

2. Native conservation practices and knowledge associated with coastal and marine resources

"There was a First Fish ceremony that happened at the mouth of the river when the Chinook salmon came up the river at the beginning of the Spring, runners sent from one tribe to the next, clear up to the headwaters in Oregon at least 4 tribes that all depended upon the Chinook salmon in the river; that signal meant that we could harvest for our daily use, but not store it – until word came down from the last tribe that they had received their fish (that was with the Spring salmon). In the old days, Spring salmon went into Fall salmon went into Winter salmon – back then there weren't gaps between salmon runs; in the Fall the rivers would drop, and there were two places on the Klamath where we established the fish dam (it did not block the river, there was always one side that was open) and every third day the dam would open up and all the fish would go through it, so they were not blocked up behind it. It took 10 days to construct it and it was in for only 10 days and then taken out." (Robert McConnell Sr., Testimony to the MLPAI Blue Ribbon Task Force, 2010).

"It may be argued that such a system [the First Salmon ceremony], led by an experienced leader, can produce results similar to one achieved by a biological management system with population models, counting fences, daily data management and harvest quota enforcement – but without the whole research infrastructure, quantitative data needs, and associated costs." (Berkes and Berkes 2009:7)

Indigenous conservation practices associated with anadromous fish

The First Salmon Ceremony (common amongst Pacific Northwest tribes and documented extensively in the literature since the 1910s), whereby intertribal communication and collaboration enabled upstream and downstream tribes to promote measured and equitable use of the resource, has been described as "the most notable of the [tribal] regulatory systems" to address seasonal shortages of salmon (Haensley 1989:178), where "the interests of individual tribal members and their larger social group were virtually inseparable from ecologically sustainable practices" (Erlandson and Rick 2008:7).

The Yurok First Salmon Ceremony commenced with the taking of the first fish at the village of *Wetlkwau* at the river mouth. After this first salmon had been taken, no one could gather any more except for immediate consumption until word traveled back that the fish had made it all the way up to the headwaters of the Klamath, nearly 300 miles upstream of *Wetlkwau*. Once it was known that those upriver villages and tribes had fish, the Yurok could gather for winter storage. This ensured that not only did the upriver neighbors and all the other animals had sustenance, but also ensured there was a healthy and significant population of fish returning to the river and successfully spawning (Yurok Tribe 2010b). Historically, tribes dealt with seasonal salmon shortages both by regulating harvests and by switching to alternative aquatic and terrestrial protein sources (e.g., shellfish, deer, acorns), or in the case of the tribes living along the Nimpkish River (Vancouver, BC) in 1792, by placing a moratorium on salmon fishing and temporarily moving their villages to other sites until the salmon populations increased (Turner and Berkes 2006).

For the Yurok and hundreds of other tribal communities, salmon is sacred. Salmon are relatives, with immortal spirits, voluntarily sacrificing themselves for human benefit (Kroeber (1925) 1976, Heizer and Elsasser 1981, Johnson 2001). Salmon are not only ecological keystone species, critical to the balanced functioning of marine and riverine ecosystems: they are ***cultural keystone species***; playing a key role in tribal identities, rituals, beliefs, stories, social relationships, and food systems of countless tribes and tribal communities throughout California, Oregon, Washington, British Columbia, and Alaska (Hagen et al. 2006). Native tribes along the Columbia, Smith, Klamath, Trinity, Mattole, Eel, Russian, Salmon, Shasta, Sacramento, American, Feather, and Yuba Rivers[3] refer to themselves as "people of the salmon" or see the salmon as relatives (Johnson Gottesfeld 1994, Woody 2008). Pacific salmon were – and still are - the most widely exchanged wild-harvested product for Native tribes in the Pacific Northwest (Turner et al. 2003). For Yurok, the word for salmon is *nepuey*, which means literally "that which is eaten" - implying the consumption of salmon in all phases of its lifecycle (eggs, hatchlings, juveniles, adults), by sea and river creatures, by predatory fish, birds, mammals, and humans, through to the scavengers and microorganisms feeding on the decaying carcasses (Robert McConnell, Sr., Personal Communication). Salmon is the only species that is thought by the Yurok to have its own "house" beyond the ocean (Waterman 1920:191).

Salmon is treated reverently in ceremony, and respectfully when fished, dried, shared, or eaten. Strict cultural prohibitions against pollution, waste, and greed were, and are, key components of Native belief systems and traditional practices (Johnson Gottesfeld 1994, Hagen et al. 2006, Turner and Berkes 2006). As Boldt (1974:351) notes, "[w]ater pollution was not permitted in any form during the fishing season" (cited in Ross and Pickering 2002:195). Tribal members going out to harvest, both in ancient times and in the present era, ritually prepare themselves and their harvesting tools, and when gathering or hunting living organisms, address the gathering and hunting sites and the organisms therein respectfully and with prayers. Subsistence or ceremonial resource acquisition conducted by the Yurok is for one's own household and for extended social relations.

[3] This list of rivers is representative, but not exhaustive.

Ethnologies and Northwest tribal histories document inter- and intra-tribal fishing management and regulations through ownership and permitting of harvesting at specific sites, during defined seasons, and with approved gear (Waterman 1920, Kroeber (1925) 1976, Swezey and Heizer 1977, Heizer and Elsasser 1981). Reciprocal sharing of seafood harvests, such as during ceremonies or potlatches, have been described not so much as a redistribution of resources to people (e.g., to even out supply fluctuations, such as the sharing of agricultural surplus), but as fostering the long term redistribution of *people to resources* (Adams 1981:385, emphasis in the original text). Complex social organization allowed for long-term stability of sites where fishing resources could be both predictable (e.g., spawning and feeding sites) and variable (e.g., intertidal zones). This is a critical distinction for marine resources management and conservation strategies, as it demonstrates the importance of retaining humans in the seascape.

Early harvesting techniques in the Pacific Northwest involved stone-walled tidal pools that trapped fish and mammals at the mouths of creeks[4] (Hagen et al. 2006, Menzies and Butler 2008); later methods included fishing weirs and woven fish traps. Fishing weirs and traps have been used by coastal indigenous communities for over 4000 years (Hayden 1990), to collect a wide variety of fish – not just salmon (Moss 2004), and while riverine weirs are largely seasonal, tidal weirs were used less discriminately throughout the year to harvest herring, sardine, smelt, and salmon (Byram 2002). Communal dam building by the Yurok of the Kepel fish dam along the Klamath has been described as "the largest mechanical enterprise undertaken in Northwestern California" (Swezey and Heizer 1977:17); the dam was opened daily after morning fishing, and at the same time great numbers are passing through the open gap left on the south side of the river" (Thompson 1916:178). The weir is then deliberately torn down after ten days of use to allow the salmon run to proceed upriver (Ibid.).

Historical harvest controls included nets and weirs specifically designed to allow for escape (Claxton and Elliott 1994) and fishtraps that were partially dismantled at the end of the day and the end of the season to let fish through (Jones 2002). Squaxin Island tribes used salmon nets that only reached one-third of the way across the river, and gill nets with large holes to allow fish to pass through (Ross and Pickering 2002:195). Turner and Berkes describe the Saanish (Salish) reefnet salmon fishery – a system taught to the Saanich people by the Salmon people and by the Creator, at the same time when the Salmon first offered themselves to the Saanich - as "a detailed example of how narratives, social rules, ecological knowledge, conservation practices, and technology come together" (2006:506). A month-long fishery practiced in restricted areas under hereditary ownership, traditionally constructed reefnets allow for escapement through deliberately placed willow hoops because "salmon, like humans, travel in family groups, and it is very important, just as for human families, that some members of the family be allowed to carry on their lineage (Ibid:508, Earl Claxton Sr., Personal Communication).

Coastal groups throughout the Pacific Northwest maintained clearly delineated harvesting zones; inland groups also had specific fishing and gathering sites on the coast that were visited seasonally, with permission. For example, a River Yurok (someone living upriver) would not have the right to harvest from a Coastal site unless permission was inherited, granted, or the right is purchased (Jarvis and Gates 2007). Fishing and gathering rights were also reciprocally traded, for example the Hanaksiala and Tsimshian peoples shared a Tsimshian seaweed-halibut fishing/processing camp and a Hanaksiala eulachon fishing/grease-processing camp (Compton 1993).

The Heiltsuk practiced selective harvest and stock management in stone fishtraps (Carpenter et al. 2002), and the Nitinaht Nation used salmon weirs for selective fishing and to monitor fish runs as they moved upriver (Hagan et al. 2006). The Nuu-chah-hulth transported salmon eggs to augment inland waterways (Sproat 1868, Irwin 1984); the Halkomelem Nation established new salmon runs when communities resettled, and Halkomelem women brought fish with them following virilocal marriages (Jones 2002). Johnson proposes that Northwest coast tribes be characterized as "salmon ranchers" (2009:44), and hypothesizes various salmon husbandry practices, including genetic selection in favor of larger fish, increased population size, reduced population variability, advantageous run timing, and greater home-stream loyalty (2001).

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[4] Literature reviews in Hagen et al. 2006 and Carpenter et al. 2000 list hundreds of stone and wood archaeological trap sites from 4450 – 5200 BP associated with the harvest of salmon, herring, eulachon, dogfish, lingcod, dolphins, porpoise, seals, sea lion, greater scaup and other species.

"Since time immemorial, we have lived and fished and used the marine environment. We haven't been given credit, or recognized for our role in maintaining the environment in a pristine state. We've been taken out of the equation, much like we've been taken out of the equation of maintaining forest with fire. And we're going to bear a greater burden of impact when [Marine Protected Areas] MPAs are put into place and we are unable to go to our traditional gathering spots. All these places have been taken away from us – we can't go to Redwood Beach and harvest smelt like we used to, and yet they are in decline." (Robert McConnell Sr., Personal Communication 2010)

Yurok fishing regulations pre-date the California Department of Fish and Game by thousands of years. Historically the Yurok managed "fishing places" spatially (fishing rights associated with a specific location), temporally (fishing rights associated with a time period), hydrologically (fishing rights associated with a designated water quantity), and for specific taxa (fishing rights associated with a location, time period, and species). For example, some spots were owned for salmon, or for eels, or for half a day or several days, or when the river reached a certain height, etc. (Waterman 1920:219, Huntsinger and McCaffrey 1995:161). In the early 20th century Kroeber (1923:17 cited in Keeling 1992) documented "assignment of economic and legal values to fishing places" with "minutely controlled boundaries" (Simmons 1997). Barsh explains that limiting the number of fishing grounds "minimized the risk of accidentally overfishing," while intentional overfishing translated into "forfeiture of their grounds...and loss of their ability to remain in the community (1982:171).

Today, the Yurok Tribal Fisheries Program monitors, conserves, restores, and manages anadromous fish populations throughout the Klamath-Trinity Basin (Yurok Tribe 2010). Since 1994, the Yurok Tribe has assumed responsibility over the management of its fisheries from the Bureau of Indian Affairs and the U.S. Fish and Wildlife Service. These efforts not only include the management of anadromous fish populations, but also large and small scale riparian and stream habitat restoration projects in the lower tributaries of the Klamath River. Ongoing projects seek to increase channel and bank stability, increase sediment storage capacity, reduce sediment delivery, improve salmonid spawning and rearing, increase habitat complexity, eliminate invasive plant species, and improve spawning gravel quality (Yurok Tribe 2009) in an effort to restore fisheries populations of the Klamath Basin.

Indigenous conservation practices associated with shellfish

Scientific evidence for indigenous conservation practices is rich, yet often ignored by the natural scientists. In Hurst's (2003) examination of butter clam (*Saxidomus giganteus*) remains at a prehistoric Qwu?gwes archaeological site (ancestors of the Squaxin Island tribe), her analysis suggested systematic, selective and/or rotational harvesting of clams that were at least 8 years old and 60-95 mm length, and the re-deposition of younger, smaller clams to promote further growth. Even while positing faunal depression due to indigenous harvesting, Butler concludes that "large fish population size remained relatively consistent until European contact" (2000:655). First Nations in the Broughton Archipelago (British Columbia) built clam terraces, expanding the habitat of butter clams (*Saxidomus giganteus*) and littleneck clams (*Protothaca staminea*) (Williams 2006).

In Washington State, indigenous Squaxin Island communities manage and monitor shellfish harvests and the collection banks; "elders demand that different shellfish are collected from different areas to guarantee the viability of individual shellfish banks" (Ross and Pickering 2002:195).

Abalone, a cultural keystone species for both the Yurok and the Gitxaala people of Canada, has been sustainably harvested by both tribes for centuries. Per Menzies, "[t]he Gitxaala approach to bilhaa [abalone] harvesting is and has been explicitly organized to ensure the continuation of the biological stock" (2010:216). Gear restrictions (hand-picking or passive traps) and spatial restrictions (not picking abalone from areas out-of-reach from beyond what a person could access from along the beach ensured sustainable harvests for at least 1400 years (Ibid.). Coastal Tsimshian stewardship practices for invertebrates such as abalone, clams, chitons, and crab include "careful, respectful treatment of abalone and clam bed; protection of abalone from excess noise; selective harvesting of shellfish by size, leaving the small ones to grow; seasonal harvest and leaving some areas for several years without harvesting" (Hagen et al. 2006:17).

The Yurok traditionally restricted mussel harvesting *temporally* by only harvesting during certain times of the year, *spatially* by only harvesting on the ocean side of beds, and rotating between different sizes, and *morphologically* by only harvesting the larger mussels, leaving the juveniles behind (refer to Table 4). Climatological and oceanographic conditions further limit mussel harvest through seasonally rough weather (making certain off-shore mussel beds inaccessible), variation in tides (mussels can only be harvested at low or minus tides), and the seasonal occurrence of dinoflagellate shellfish toxins.

Indigenous conservation practices associated with marine plants and ecosystems

Turner (2003) and other researchers report Haida, Tlingit, Chugach, Dena'ina, and Coast Tsimshian harvesting of seaweed species including red laver (*Porphyra abbottiae*) and affiliated species, giant kelp (*Macrocystis* spp.) and eelgrass (*Zostera marina*) with attention to seasonality, conservation, and sustainability. Traditional harvesters carefully gauge the physiological growth stage of the seaweed, harvesting when it is most likely to regenerate quickly, and adhering to cultural taboos such as not picking seaweed when it is raining, only picking from the rocks above the level of the tide and not from floating seaweed (Turner 2003:288). Gitga'at seaweed harvesters "maintain that the seaweed responds well to continuous harvesting, and this helps to maintain its quality," comparing seaweed harvesting to trimming and tending garden plants (Ibid:291).

When the Yurok gather seaweed, rocky intertidal areas are targeted at minus tides just after daybreak. Seaweed is harvested in the spring by hand, picking the top of the plant while leaving the root attached. A patch is pruned by thinning it and not removing large swaths so that it will grow even better in the next cycle, as well as ensure that other types of seaweeds and/or plants do not invade an empty space. If needed, seaweed is washed in tidal pools to rinse off sand, snails, and limpets, which ensures they will survive (i.e. no bycatch), and the use of ocean water ensures the seaweed retains the salt.

In ancient times, indigenous Pacific Island societies maintained watershed management systems that stretched from inland hills, mountains, or valleys to the coral reefs and lagoons – this included the Hawaiian *ahupua'a*, the Yap *tabinau*, the Fijian *vanua*, and the Solomon Islands *puava* (Berkes et al. 2000). "In each of these cases, the social group inhabiting the ecosystem unit was considered to be part of the system, and affiliation with a particular area was considered to be part of a person's identity" (Ibid., Page 1256). Similarly, Yurok are traditionally identified as Pey-cheek-lo' (upriver), Pue-lik-lo' (downriver), and Ner-er-ner' (coastal) depending on the area in which they were raised or the location of the village in which they descend. Historically, Yurok fishing sites, hunting grounds, and gathering areas designated as customary use areas under traditional ownership were subject to a concomitant "responsibility to properly care and manage those areas and resources sustainably and in a culturally appropriate manner. For [the Yurok], this responsibility continues unbroken for many villages and families since *Noohl Hee-Kon* (the beginning)" (Yurok Tribe 2010b).

3. Traditional ecological knowledge and customary practices as the basis for long-term resource conservation

Elaborate, time-tested, localized knowledge systems known as indigenous knowledge (IK), traditional ecological or environmental knowledge (TEK) and local ecological knowledge (LEK) are the cultural foundation for ecological conservation and restoration and cultural revitalization. As a "knowledge-practice-belief complex" that is dynamic, adaptive, and multi-generational, and includes both the process of knowing and the knowledge itself (Berkes and Berkes 2009:7-8), indigenous knowledge systems include species-specific morphology, life cycles and intra-species diversity, behavior ecology, inter-species interactions, and trends and variations in community assemblages, habitats, land- and seascapes, natural disturbances and climatological regimes (Conklin 1954, Turner 1974, Bulmer et al. 1975, Dwyer 1976, Posey 1979, Baleé 1994, Fleck and Harder 2000, Riedlinger and Berkes 2001, Shephard et al. 2001, Anderson 2005, Berkes 2010). These knowledge systems are coupled with worldviews that shape cultural institutions, norms, rules, and practices.

Tables 1-2: Indigenous/traditional conservation management practices (original Tables excerpted from Cinner and Aswani 2007:203 and Berkes et al. 2000:1253)

Table 1 – Summary of customary management measures

Types of customary management	Description	Analog in modern fisheries management techniques	Differences to modern fisheries management	Examples
Spatial	Areas closed to fishing. These can be temporary (i.e. closed for several months to provide supplies of fish for a feast) or permanent (where spirits reside)	Marine protected areas, temporary fisheries closures	Often temporary and almost always harvested. Maybe reactive to events (e.g. death in village, declining catch)	Polunin (1984) and McClanahan et al. (1997)
Temporal	Restricting fishing/ harvesting activities during specific days, week, months, etc. Often short in duration (e.g. Sabbath), species-specific (e.g. trochus), and around a specified event (e.g. spawning aggregation)	Closed seasons	Dates may be highly flexible and reactive to events (e.g. price fluctuations for commercial species, spawning aggregations) rather than set dates.	Johannes (1978) and Thornburn (2001)
Gear	Prohibiting/restricting certain harvesting technologies or techniques	Gear prohibitions	Maybe inherited rights to use certain gears. Often exclude non-owners	Johannes (1991) and Cinner et al. (2005)
Effort	Limiting who can harvest certain species, use certain gears, fish certain areas, etc.	Permitting	Often based on initiation rights, lineage, class, or gender	Mantjoro (1996) and Veitayaki (2002)
Species	Prohibiting the consumption of certain species. Often lineage-related dietary restrictions.	Species-specific bans	Often the species may be caught or killed, but not eaten.	Carrier (1987) and Hickey (2000)
Catch	Restricting the quantity of a harvest. Often social norms that stress the avoidance of waste. Very rare.	Total allowable catch, quotas	Quotas not set *a priori*	Johannes (1981) and Tuelieres (1992)

TABLE 1. Social-ecological practices and mechanisms in traditional knowledge and practice (adapted from Folke et al. 1998).

Management practices based on ecological knowledge

Practices found both in conventional resource management and in some local and traditional societies

- Monitoring resource abundance and change in ecosystems
- Total protection of certain species
- Protection of vulnerable life history stages
- Protection of specific habitats
- Temporal restrictions of harvest

Practices largely abandoned by conventional resource management but still found in some local and traditional societies

- Multiple species management; maintaining ecosystem structure and function
- Resource rotation
- Succession management

Practices related to the dynamics of complex systems, seldom found in conventional resource management but found in some traditional societies

- Management of landscape patchiness
- Watershed-based management
- Managing ecological processes at multiple scales
- Responding to and managing pulses and surprises
- Nurturing sources of ecosystem renewal

Traditional knowledge systems have recently been described as holistic learning systems that deal with ecological complexity, similar to fuzzy logic models (Berkes and Berkes 2009), but more comprehensively, in that indigenous knowledge systems are "set within an ecosystems framework" (Ross and Pickering 2002:190) and "consider a large number of variables qualitatively, while Western science tends to concentrate on a small number of variables quantitatively" (Berkes and Berkes 2009:7); expert indigenous knowledge also tends towards an empirical acknowledgement of system complexity, avoiding simplifications and generalizations. For example, the Saanish reefnet system described in Section 2 involves intricate ecological knowledge including tidal and ocean current movements, familiarity with salmon taxonomy, lifecycles, assemblages, schooling habits, and the dynamics of salmon runs in the context of overall ecosystem cycles and weather patterns, and willow seasonality, habitat, and physiology involved in net making (Turner and Berkes 2006:509).

Local ecological knowledge serves as both a long-term reality check and an early-warning device for environmental changes. In Marovo, women who fish and gather mollusks and crustaceans (at times providing the majority of household protein during rough weather periods which suspend male fishing activities) are the earliest and strongest voices articulating concern over sediment pollution from logging and other extractive industries along coastal habitats (Hviding and Baines 1996). For the Yurok the floods of 1955 and 1964 that led to a large-scale dump of sediment into the ocean had a noticeable impact on marine intertidal species abundance just north of the Klamath River.

Concerns over the health of the Klamath River and the abundance of fish are now expressed by elders that talk of the days of their youth when the Klamath was much larger, rose and fell with the seasons, and the fish moved up the river in masses. A healthy river is fundamental to the health and abundance of all riverine species, as well as the physical and spiritual health of the Yurok. The river must be clean when bathed in for ceremony. There is the need of the rise and recession that a natural river allows that is essential for good willow roots needed for basketry. The salmon must be able to travel to spawn to all reaches. And the purity and abundance of the water and species is critical.

Many Yurok now talk of a "sick river" and relate its health of that of the Yurok People; attributing the river condition to the hydroeclectric dams on the upper Klamath as a primary factor. Blue-green algae (*Mycrositis aerogusia*), is now seen along the banks of the Klamath and moving in large masses downstream. Heightened water temperatures lead to the proliferation of the algae, as well as certain fish diseases. These factors led to the massive fish kill in 2002 on the lower Klamath River. These changes in the health of the Klamath River and the resulting impact to salmon and other species (such as sturgeon, lamprey eel, and candlefish) has inspired the Yurok Tribe, as well as Yurok citizens to take action. This has included abstention from fishing, an increase in fisheries studies and monitoring, an increase in water quality sampling, development of species contaminate studies (which include coastal species and sites), in addition to Yurok leadership of an effort resulting in the largest dam removal in U.S. history planned for the Klamath River.

Indigenous knowledge has been shown to provide critical scientific information such as marine ecozones (Calamia 1999), juvenile habitats (Aswani and Hamilton 2004), spawning aggregations (Johannes 1981, Johannes et al. 1999), spatial distribution, relative abundance and seasonal resource variability of marine invertebrates (Botkins 1980, Siar 2003, Aswani and Weiant 2004), reef fish (Chapman 1987) and culturally important species including nearshore and pelagic fish, shellfish, crustaceans, echinoderms, and seaweeds in estuarine and intertidal flats and mangrove forests (Pfeiffer and Butz 2005) and avian animal behavior at different lifestages and for distinct flocks (Moller et al. 2009, Peloquin and Berkes 2009).

As Nabhan (2000) pointed out in his seminal article on the O-Odham and Comcaac, ecological concepts such as food chains, food webs, species distributions and interactions, habitat and soil types and community assemblages are often embedded in indigenous linguistics. For example: Yurok place names such as *"regok-o-yu u wro',"* meaning 'trout run up [this creek]"; *pr'gris-o-tsye'guk*, translated "bald-eagle he sits"; *tskwe'ges-waäg/* , and *tskwe'ges-o-rike'n* translated "harbor-seal his-rock" [sea stack]/"harbor-seal where he-sits" [rock in the river]

indicate species distribution (Waterman 1920)[5]. The word for otter in Karuk is *amvá-amvaan,* lit. 'salmon-eater' or *pay-sáruk* 'this.one–by.the.river'; for kingfisher it is *athkup-ámvaan*, lit. 'trout-eater'. In Hoopa, the term of sea lion is *yida:ch'in-te'il* 'coming.from.downstream–they.swim.along' (Bright, n.d.).

In a benthic mapping exercise for a marine protected area in coastal Oceania (Western Solomon islands), Aswani and Lauer (2006) found indigenous ecological knowledge and indigenous classification of habitats and associated benthic substrates and fish species to help delineate biogeographical representation, vulnerable habitats and life stages, and sites of rare, endangered and exploited species; and identify biological events and geomorphological features of significance. The MPA established in the area surveyed by Aswani and Lauer took into consideration human foraging areas and customary sea tenure, aiming for a balance between biological significance and social sustainability.

Indigenous self-regulated resource use regimes in the 20th – 21st century such as the ones described in Tables 1 and 2 include Seri fishers who "devised rules to limit fishers' harvests, harvest locations, and who can enter and participate in the fishery, as well as mechanisms to monitor that the rules are followed and to enforce them against rule-breakers" and whose fisheries management extends to exerting pressure on fish buyers (Basurto 2008); Vanuatu and Fiji fishing villages use fishing, trochus, and sea cucumber ground closures, bans on harvesting turtles or their eggs, and net and spearfishing controls as part of comprehensive community-based marine resource management program (Johannes 2002a); in Samoa, 64 villages with Village Fisheries Management programs had 52 community-owned marine protected areas (Ibid.).

Yurok tribal members as cultural and ecological stewards and co-managers

"Gathering in a place where your grandmother, great-grandmother, and great-great-grandmother had gone before showed deep respect for the old ways and was a poignant commentary on the sustainability of human harvesting practices." (Anderson et al. 1997:18)

"We are living, breathing cultures, we have not stopped doing what we were doing when the non-Native people came to us. Within the Yurok culture, we welcomed you all – our origin stories told of people with translucent, fair skin – half-human people who created this world, some left, some stayed and became – there's a rock at the mouth of the river, that guides the salmon back – that represents these half-human people who stayed in various places – these rock craigs up and down the river and up and down the coast, if you look at a map...you will see, time after time, those rocks still have their Yurok name on them...we will continue to be here, and we will continue to practice our culture in the manner as we see fit." (Robert McConnell Sr., Testimony to the MLPAI BRTF, 2010)

Prior to EuroAmerican dominance in the geographical and institutional landscape of the Pacific Northwest, Native American groups combined extensive ecological knowledge with a holistic worldview (or ethic) of people as part (rather than separate from) of the natural environment, and where humans have reciprocal, mutually sustaining relationships with all living beings. This philosophical and practical platform supported carefully proscribed harvesting regimes, prohibitions against wastage and greed, and responsible relationships with neighboring tribal groups (Johnson Gottesfeld 1994, Ebbin 2009). Proximity to the resource base, combined with cultural and spiritual connections to the resources themselves, takes the concept of guardianship to an entirely new level. The Yurok, like many tribes and tribal communities whose ancestral territory stretches along the California, Oregon, Washington and Alaska coastlines, have been practicing effective resource management for centuries.

[5] Although Waterman (1920) documented over thousands of place-names in Yurok territory, he notes this represents probably 1/3 – 1/4th of the total number known to the Yurok at the time. Within Waterman's ethnography, original terminology is often simply categorized as "fishing place" or "creek" without any accompanying translation.

Johnson (2009) and Dietz et al. (2003) credit strong tribal institutions as the key to sustainable Pacific salmon fisheries, noting that these institutions "effectively functioned to resolve conflict, promote technological development, provide reliable information, provide feedback about the environmental effects of resource-harvesting decisions, and encourage the accumulation and transfer of relevant knowledge" (Ibid.).

Tribal or indigenous co-management of marine and fisheries is practiced by the Yakima, Umatilla, Nez Perce, and Warm Springs tribes to cooperatively manage salmon fisheries along the Columbia River; by the Hoh, Quileute, and Quinault tribes and by Puget Sound and other Washington coast tribes for fisheries in their corresponding regions; by the Haidi Gwaii of Queen Charlotte Islands who established a co-management regime for abalone (Menzies 2010); and by the Klamath River Salmon Management Group (KRSMG), which involves the Yurok, Karuk and Hoopa Valley Tribes in co-managing salmon fisheries in the Klamath Basin.

The case for increasing tribal control over coastal resources and within defined protected areas is strong. Indigenous and Community Conserved Areas exist on all the major continents, in Austronesia and the Pacific Islands (http://www.iccaregistry.org/). Within the current decade, indigenous rights and responsibilities have been incorporated into co-management regimes through the Pacific Rim. The Kahoòlawe Marine Reserve in Hawaii, covering the island and surrounding waters within a 2-mile radius, "can be used only for native Hawaiian cultural, spiritual, and subsistence purposes, including fishing, for environmental restoration, and for historic preservation and education (Johannes 2002a:327). In the Western Solomon Islands, "hybrid" marine conservation programs that integrate indigenous ecological knowledge with MPAs were developed in participatory partnerships involving scientists and Native communities: the community-enforced MPAs were based on participatory research that included ethnographic studies of customary sea tenure, local knowledge of benthic habitats and life histories of vulnerable species and resident taxa, and significant spatio-temporal environmental events (Cinner and Aswani 2007).

Overview of Yurok fisheries resource conservation programs

> *"Using fishers' knowledge helps widen the range of information available for decision-making, particularly important for complex, multi-scale systems."* (Berkes 2003:12)

In 2006 the Department of the Interior and the Yurok Tribe of Northern California announced a major agreement to cooperate in the management of land and fishery resources in the Klamath Basin. This unprecedented agreement was designed to assure the coordination of resource management programs, and expand the cooperation between the Tribe and Interior agencies in river monitoring, data collection, strategic planning, land acquisition and recovery and related natural resource management efforts. As part of the Agreement, the Yurok Tribe conducts valuable studies including fish counts, water quality monitoring and juvenile Chinook assessments. Then Yurok Tribal Chairman, Howard McConnell noted, "it allows us to leverage our proven expertise in fisheries, forestry, watershed and other natural resource areas to the long-term benefit of the basin and its inhabitants" (US Fish and Wildlife Service 2006).

The Yurok Tribe specifically manages certain species that it harvests, such as Coho salmon, fall Chinook salmon, spring Chinook salmon, and green sturgeon, whereas fall Chinook is the only species that is managed in a coordinated manner by other West Coast fishery entities. The Tribal Council adopts numerous in-season conservation measures to minimize harvest impacts to these stocks; such as partial fishery closures each week (typically closures for 2-3 days/week), closing the fishery early in the season if a pre-determined percentage of the harvest is obtained early and then re-opening the fishery later in the season for the remainder of the catch (on a different stock of fish), prohibitions on commercial fishing (to limit fishing effort), limitations on bartering, limitations on the number of sturgeon that can be retained per person each day, occasional size limitations (slot limits) for green sturgeon, and restrictions where fishing can occur (e.g. no fishing within 500' of Coon Creek falls, which is known to congregate green sturgeon). Tribal wardens and police officers patrol the river, checking

fishers' catches, and the Tribal Fisheries Department monitors juvenile salmonid emigration, habitat use, movement, production trends, disease presence, growth, genetic composition (hatchery vs. wild), and distribution throughout the Klamath River.

The Tribe also intensely monitors its fishery throughout the spring and fall season (early April through November) to provide scientific information for the assessment of the population dynamics of the fish stocks, so that future fisheries can be properly managed, as well as ensuring the Tribe stays within pre-determined harvest allocations. Dave Hillemeier, Yurok Tribal Fisheries Program Manager, provides an example of the intensity of this monitoring program: "during the peak of the fall season (August 1 through September) we have crews conducting net counts and contacting fishers in the estuary every two hours from 7:00 am till past midnight (when the fishery is open)." The Tribe also measures water temperature, tracks, and is conducting special studies of lamprey eels and green sturgeon that include measuring water temperature and tracking the fish from the estuary to their reproductive grounds, setting the foundation for additional Tribal regulation of these species if the populations show further signs of decline (Yurok Tribe 2009, 2010).

The Tribe engages in habitat assessment, riparian enhancement, and stream habitat restoration (pools and spawning beds) to increase habitat complexity and improve spawning gravel quality in three lower Klamath tributaries and monitors restoration effectiveness, conducts geomorphic and hydrologic assessments in the Klamath River estuary, and participates in the design and implementation of restoration programs for the Trinity River (Ibid.).

Since the salmon ocean fisheries have been more tightly regulated, Yurok fishers report an increase in the average size of the fish caught in their nets (Robert McConnell Sr,. Personal Communication 2010), a finding congruent with lowered ocean fisheries catches of age-3 fish.

4. Overview of indigenous marine resource harvesting practices for the Pacific Northwest vis-à-vis other anthropogenic pressures

"The life histories of many twentieth-century fisheries have been depressingly similar: initial co-existence with indigenous fisheries; emergence of large-scale industrial expansion followed by resource collapse; introduction of limited restrictions on fishing effort, which become increasingly severe, making it hard for fishing communities to survive and to reproduce themselves. Yet for nearly two millennia prior to the industrial extraction of salmon, indigenous peoples maintained active harvests of salmon, which are estimated to have been at or near median industrial harvests during the twentieth century." (Menzies and Butler 2007:441)

Prehistoric Native harvesting impacts

Scientific evidence in the prehistoric record is ambiguous regarding ecological impacts of aboriginal populations on food prey: while aboriginal fishing impact on coral reefs for 35,000 – 40,000 years is considered to be limited (Jackson et al. 2001), the impact of indigenous Mediterranean peoples on molluscs circa 4000 BP (Mannino and Thomas 2002) and by Aleutians in sea otters circa 2500 BP (Simenstad et al. 1978) is considered to have been substantial, the latter causing trophic cascades while at the same time increasing fish populations that would otherwise have become sea otter prey. Similar effects are described by Dayton and Tegner (1984b), who assert that Chumash harvesting of sea otters apparently released large abalones and sea urchins. For indigenous inhabitants of the Lower Columbia Valley circa 600 BP (Butler 2000),[6] due to limited and incomplete data, their impact on terrestrial and aquatic fauna remains largely theoretical.

[6] Butler's analysis is based on eight lithic sites assumed to be short-term seasonal camps, six of which were excavated with a coarse 6.4 mm mesh screen, too large to assess most of the smaller fish species contained in the analysis. Lack of data on exactly when, and to what extent indigenous human populations declined at the sites analyzed, obfuscates the results. Over

Aboriginal harvesting of Pacific marine mammals is contested in the literature, varying by site and culture studied. Hildebrandt and Jones (1992) argue for prehistorical human overexploitation of seals and sea lions along the California and Oregon coastlines. In contrast, Lyman (2003) found aboriginal predation of adult male Steller sea lions (*Eumetopias jubata*) at Seal Rock (Oregon) resulted in steady-state sea lion populations despite several hundred years of predation. Etnier (2007) compared two indigenous hunting strategies for fur seals (*Callorhinus ursinus*) along the Pacific coast, and found that targeting males and females of all ages resulted in sustainable harvests at the Ozette Village Site (Washington) for over 500 years[7], while harvesting of young, sub-adult and adult females at the Moss landing Hill Site (California) extirpated the population.

Following in the footsteps of the widely debunked and ignominious "noble savage versus ignorant savage" debate, prior theories of resource use posited by paleoarchaeologists based on limited numbers of sites and artifacts, without accompanying ecological and climatological data, are increasingly challenged. For example, in a review of the archaeological records dated between 6000 and 4000 BP, despite the increasing commonality of shell middens, Moss (2004) found no evidence of an abrupt switch to shellfish along Pacific Coast peoples, as claimed by earlier researchers. Rather than assuming cultural adaptations to a posited stabilization of environmental resources around 5000 BP enabling a significant dietary reliance on anadromous fish (viz., Fladmark 1975, Lyman 1991), scientists including Moss (2004), Byram (2002) and Erlandson and Rick (2008) call for less polarized rhetoric and more rigorous studies of the full faunal record, local climatic and environmental change before developing "grand theories of how subsistence changed across southeast Alaska or the larger Northwest Coast over time" (Moss 2004:187).

Byram (2002) notes that sloppy research techniques such as coarse sampling (in one study finer mesh screens recovered 7000 fish bones where previously only one fish bone had been recovered), limited ethnographies (summer researchers observed certain harvesting behaviors more than others), subjective bias ("big-game" researchers spending more time documenting salmon fishing trips and elk hunts), gender bias (women's harvesting activities were generally ignored and/or underreported), physiological gaps in the artifact record (cartilaginous species and plant-derived structures are poorly preserved) and the landscape record (shoreline processing sites are more likely to be lost to archaeology), make for both ethnographic misrepresentation and scientific misinterpretation of data by academics. Examination of fishery scientists' conclusions from the 1940s who asserted Native overfishing of salmon stocks via traditional weirs (cf. Craig and Hacker 1940, Hewes 1947) reveal studies lacking an ethnographic component: the authors were ignorant of ritual and cultural controls such as the First Salmon Ceremony and technologies allowing salmon escape (Swezey and Heizer 1977).

The division of Native peoples into sedentary versus nomadic peoples, and assumptions of rigid migration patterns have also been challenged, with concomitant implications for historical patterns of resource use. More detailed archaeological studies such as those of Byram (2002) on fishing weir use by Oregonian coastal peoples challenges widespread assumptions of archaeological sites uniformly denoting residential use by roving populations, and instead demonstrates what he calls a "commuter economy" with temporary campsites complementing permanent villages and community members alternating between inland and coastal "work stations" where Native people "visited various localities through the course of a week, month, or season" (Ibid., p. 332). Jones et al. revise previous archaeological determinations of bi-seasonal coastal resource use, concluding that central California indigenous peoples occupied coastal sites nearly year-round, constantly occupying sites for up to 3600+ years (Jones et al. 2008). For the Yurok, year-round coastal resource use occurred by coastal Yurok while those Yurok living along the Klamath River could be associated with the term "commuter economy."

Moss and Erlandson (2010) found consistent harvests of *Semibalanus* barnacles at prehistoric sites in Alaska, but an absence of the species at the site today, due to the influence of freshwater in the intertidal area. In their study

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28% of the remains were described as " indeterminate large/medium/small mammals" or only identified by class (e.g., Cyprinidae) and excluded from the analysis. Scatter plots of fish indices show high variation in resource use among sites for the same time periods. Butler's analysis also noted the lack of local records for climatic or environmental change for the sites. Changes in fishing technologies (nets or weirs) *at these specific sites* (our emphasis) could also explain the increased incidence of small fish.

[7] Harvests of harbor seals (*Phoca vitulina*) were also found to be sustainable during the same period at this site.

of black leather chiton (*Katharina tunicata*) populations in the Kenai Peninsula (a culturally important subsistence fisher for the Sugpiaq [Chugach Alutiig]), Salomon et al. 2007 found humans and sea otters to be equivalent in their harvesting impacts on the chitons. The authors note that reduction in chitons is closely tied to declines in other edible marine invertebrates; with serial depletions exacerbated by historical factors including loss of access to ancestral harvesting areas, commercial exploitation, the Exxon Valdez oil spill, increasing sea otter populations, and overharvesting by locals when traditional knowledge transfer and cultural restrictions are not honored. They stress the importance of examining historical reasons for decline (and not just drawing assumptions from present realities); and the importance of scientists working together with local indigenous peoples, especially for tracking local historical trends in ecological change.

Current Native Harvesting within a Context of Anthropogenic Stressors

Scientific evidence for the current historical record is unambiguous for the devastating impacts of Euroasian colonists, traders, dams and water diversions and global-scale commercial fisheries on populations of whales, manatees, dugongs, sea cows, fur seals, elephant seals, monk seals, sea lions, sharks, sea otters, sea turtles, Atlantic oyster reefs, salmon, sturgeon, and every species of rare and threatened edible seafood currently listed in IUCN databases and the Monterrey Bay Aquarium "Seafood Watch" wallet card series. The academic and popular literature abound with quantitative accounts of the populations of major edible species and oceanic predators declining sharply in the 20th and 21st centuries, with a quarter of assessed species approaching collapse (defined as 10% of historical levels), commercial fisheries "fishing down the food chain," and over 60% of documented fish stocks requiring rebuilding (Worm et al. 2006, Worm et al. 2009).

The Yurok, like most tribes and tribal communities in California, have witnessed significant declines in culturally important resources due to forces beyond their control. Table 3 summarizes the scale and primary drivers of declines in culturally important marine resources for the Yurok: salmon, eulachon, Pacific lamprey, Green sturgeon, and abalone.

Table 3: Scale and primary drivers for the decline of certain culturally important marine resources for the Yurok

Salmon Pink (*Oncorhynchus gorbuscha*), chum/dog (*O. keta*), coho/silver (*O. kisutch*), sockeye (*O. nerka*), Chinook/spring/king/tyee (*O. tschawytscha*)	Most species have declined from abundance to endangered status. [1] Dams on the Klamath and Trinity Rivers decreasing water flows and increasing water temperature, leading to heightened disease and premature death. [1] Logging, roads and riverside development, including agriculture, have negatively impacted salmon habitat. Previously unregulated commercial canneries and ocean fisheries.
Eulachon, candlefish, hooligan, smelt (*Thaleicthys pacificus*)	Declined from "countless abundance" (harvested by the pickup load) to zero. [2] Declined at the height of the timber industry; perhaps due to low stream water quality (?).
Pacific lamprey (*Lampetra tridentate*)	Declined from 1500 CPUE to 20 CPUE (0-100 CPU) [3] with continued declines reported for 2010. Poisoned (?) due to being considered as a pest in the upper reaches of the river near the dam.
Green Sturgeon (*Acipenser medirostris*)	Declined from sizes of 500-600 lbs/individual to an average size of 150 lbs in 1888, then to 50-60 lbs in 1895[4]. It is now considered rare and a species of special concern [4] Dams decreasing river flows and increasing water temperature
Abalone	Declined from harvests of 4-5 million pounds annually in 1950s – 60s (statewide) to >1

Red (*Haliotis rufescens*) Pink (*H. corrugata*) Green (*H. fulgens*) Black (*H. cracherodii*)	million pounds in 1970-80, certain species now considered endangered. Large-scale exploitation, "increased fishing pressure and increased depredation by the rapidly expanding California sea otter populations" reduced red abalone stocks, followed by "[p]ollution, habitat loss, competition with (previously) uncontrolled sea urchin population growth, mortalities of undersize abalone due to 'bar cuts', and increased harvests by both sport and commercial divers." (Leighton 1989:691)

[1] In the mid-1800s, prior to the arrival of white settlers, aboriginal consumption of salmon in the Klamath-Trinity Basin ranged from 0.5 – 2 million pounds/year (Haensley 1989). Since 1918, dams established on the Klamath River and its largest tributary, the Trinity River restricted and diverted flows essential to salmon habitat, ultimately resulting in the massive salmon fish kill of 2002 on the Klamath River, with low water flows and heightened pathogen incidence and over 60,000 adult migrating salmon died.

[2] Larson and Belchik 1998

[3] Benson et al 2007

[4] Holzkamm and Weisberg 2004. The authors note "[a]lthough Indians had fished for sturgeon in the Columbia River for centuries without degrading the resource, non-Indian commercial fishing had a substantial impact" (2004:27).

The majority of Native harvesting can be categorized as subsistence or artisanal, carried out by individuals or families traveling on foot or in small boats and characterized by hand-harvesting or the use of low-tech fishing implements (hook-and-line, throw line, spear, baskets, bow and arrow, dip/cast/beach net, free-diving, traps, hooks, and weirs) within coastal, intertidal and nearshore habitats. In present times, many people have jet or aluminum boats; the maximum net length is 100 feet (7¼" – 8" mesh); most nets are 20 feet deep to correspond to average water depths of 30 feet. Smaller fish (10-13 lb.) go through the mesh, but can be damaged along their gills. Highly regulated gill net fishing is formally "allowed" and regulated by the Tribe for Chinook, steelhead, coho, and sturgeon[8]. The Tribal gill net fishery is very selective for large (older) fish due to the average mesh size used in the nets.

Other forms of harvesting, such as hooks and spears ensure that fish can be selected discriminately with absolutely no associated bycatch. Similarly, hand harvest is conducted for a significant portion of intertidal species, which allows for very selective harvesting (refer to Table 4). Historically and currently, tribal members harvest from geographically dispersed locations, at different times in the year, consciously rotating between sites to "give it a break."

"...when we gather (and I'm going to use an acorn tree as a metaphor for ocean resources), we give prayers for what we are about to take and what we do take – prayers of thanks. I'm using an acorn tree because I've experienced it – the experience is this: we found an acorn tree and it had acorns on it, but the acorns weren't perfect and there wasn't much of a harvest (I've heard of up to 23 sacks of acorns/tree, and here we were only harvesting a few buckets of acorns), we began to harvest there, and of course, offered prayers. As soon as we began paying attention to that resource, and offering prayers, we saw an increase in that harvest over time, and now it's one of our favorite trees: up to 3-5 sacks/year (that's what we use for personal use; ceremonial use is beyond that). So this tree, which before produced only a couple of buckets, is now producing a bunch of sacks. So when we use coastal resources, we use prayers to enhance them – a little extra kick." (Robert McConnell, Sr., Personal Communication, 2010)

[8] Gill-netting by Native harvesters, which has been subject to schizophrenic regulations (banned in 1934, exempted in 1966, federally protected in 1976, banned in 1978, placed under tribal jurisdiction in 1994) results in an overall annual take that is 50% of the total salmon take for the Klamath; of that portion, 80% goes to Yurok Tribal members.

"Harvesting is...structured to address the needs of our animal relations (i.e., ecosystem health) and the needs of our community." (Menzies 2010:215)

Native harvested marine resources are primarily dried, smoked, canned, and stored in household freezers. The harvests also tend to be shared with extended family members and elders, used to feed participants at ceremonies, or traded with other tribal communities. The sharing of harvests honors cultural beliefs and ancestral traditions and helps maintain social ties both within and among tribal communities within California, and with tribal citizens throughout the United States.

Native harvesting practices contrast with commercial and even certain "recreational" uses, which also use low-tech fishing implements, but rely heavily on higher-tech fishing devices (including trawling, seine and gill nets, troll lines, vertical long-lines, deep water pots, compressed air/scuba diving, and sonar [California MLPAI 2010]), use much larger vessels, and go beyond coastal and nearshore habitats to deeper waters.

Figure 2: Hypothesized proportional negative impacts of anthropogenic and environmental factors on marine ecosystems on a continuum from highest (left-hand side) to lowest (right-hand hand side)[9]

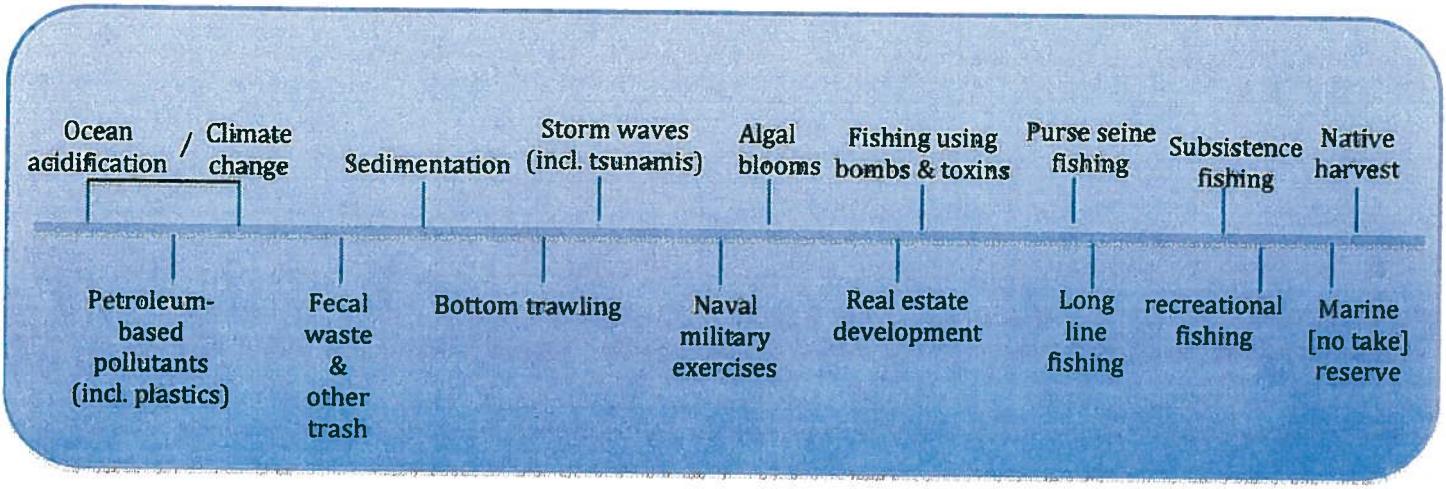

Figure 2 depicts hypothesized stressors on marine resources within State and Federal waters off the coast of California. Stressors that impact larger geographical regions and wider ranges of oceanic species and ecosystems and extend to greater depths within the water column for lengthier periods of time are depicted to the right; stressors with more localized impacts on few numbers of species and ecosystems within shorter depth ranges and over shorted periods of time are depicted on the left. Due to far-reaching impacts on marine species and oceanic waters, ocean acidification, climate change, and petroleum-based pollutants are considered to be the most uniformly negative stressors. Environmental and anthropogenic stressors affecting more limited areas (e.g., nearshore habitats but not pelagic waters) and fewer numbers of species are denoted in the middle of the continuum: these include waste from urban centers, naturally and anthropogenically induced sedimentation, bottom trawling, and localized algal blooms. Regulated fisheries are hypothesized to have one of the least proportional impacts on marine ecosystems; and marine reserves with fluid boundaries that allow poachers (in the absence of tight local enforcement), oil spills, naval sonar, and off-shore pollution are considered to still have a potentially negative impact on marine ecosystems. In contrast, Native harvest is hypothesized to be the least impactful stressor due to indigenous conservation practices that are intrinsically connected to each harvesting act.

[9] One of the ironies of the current emphasis on marine protected areas (MPAs) in the implementation of the 1999 Marine Life Protection Act, pointed out in virtually every public commentary session to the Science Advisory Team and the Blue Ribbon Task Force, is the failure of MPAs to provide ecosystem protection from the primary anthropogenic stressors of the 21st century: oil extraction and transport, industrial and real estate development, pollution, and naval military exercises.

Table 4: Overview of ecologically sustainable aspects of Yurok harvesting practices for five cultural keystone marine taxa

	Mussels	Seaweed	Surfish	Salmon	
HARVEST SEASONS	Only harvest in certain months at low or minus tide to avoid mussel poisoning – traditionally Yurok also knew to avoid phosphorescence. Primarily winter and early spring	Good quality (fresh) growth occurs only in the Spring during the first month of growth very thin like a leaf of lettuce; only harvest during low or minus tide Good after a rain	Runs begin when the strawberries begin to ripen and ends when the blackberries are done Late spring to fall	Fall Winter Spring Summer	Mid-spring late summ Low tide w Water turb opportunit very turbu tide)
HARVEST LOCATIONS	Gather at low or minus tide, on the ocean side or the side that faces the setting sun Different tides expose different mussel beds, many can only be reached on extreme low tides Most people rotate among different beds Boats used for sea stack locations Ocean had to be calm, low waves Locations associated with (i.e. "owned" by) specific individuals, families, and/or villages	Harvest is areas of little sand to minimize need for rinsing One area was turned into a gravel extraction site and destroyed seaweed there	Sandy beaches Look for seagulls gathering	Fish at the mouth of the river Fishing spots throughout the river and estuary, which certain individuals, families, and/or villages "own" Eddies Drift the river From river/estuary shore From boat From scaffold	Rocky inte Do not go
HARVESTING TECHNOLOGY	Avoid mussels close to the rocks; instead take the ones away from the rocks to allow young ones to grow larger (beard that extends from the shell, younger ones grow along the beard – hairs off the inside part attaches to the rock surface); tiny juveniles inadvertently detached when harvesting can re-attach themselves to these hairs (like Indian potatoes) (RM 2010) Removing outer layer allows for younger ones underneath to grow, as well as minimizes large scale removal, for example, associated with log displacement	Hand-harvest, picking top of plant (not tearing) while leaving root part attached to rock Pick and thin out to prune so it will grow even better next time If needed, wash the seaweed in tidal pools (not freshwater), rinsing off snails and limpets, giving them a chance to run free using a 'lahpsew (basket for this purpose) Usually a woman's role to pick Were to be preserved at the coast; taboo to bring fresh seaweed over the hill, have to be brought in a boat	Use an A-frame fishing net; dip net Hold net above wave until it breaks and then put net down behind the wave; don't touch sand Can also pick up stranded fish along the beach Usually a man's role to use net and a woman can pick up stranded ones Belief: if a woman surfished then they would stop running	Dip net Gill net Throw net Hook and line Fish weir Trigger net Spear Hand	By hand or Size limits a by DFG; ha measuring

	Mussels	Seaweed	Surfish	Salmon	
	Have to have low or minus tide, right time of year, minimal waves, daylight Best if start at outgoing tide and get them between breakers; very dangerous Were to be preserved at the coast; taboo to bring fresh mussels and shells over the hill, have to be brought in a boat Used as bait to catch rock eels				
HARVEST QUALITY	Pick bigger ones; leave little ones to seed Are abundant	Harvest particularly at daybreak in the early morning, before the seaweed is sun-burnt and tough. Seem abundant	Need to be firm and not squishy	"First quality" fish. The fish are caught, cleaned, and preserved immediately Freshest fish are closer to river mouth Spring salmon have best taste because they are fat and the water is cold Spring salmon are smaller Want them shiny and not blackened	Select only Difficult to water visib Empty and gathered f
HARVEST QUANTITY	Most people today do not preserve so only harvest as much as is needed for 1-2 meals Only harvest as much as the household could use, in amounts that can be humanly carried off the beach	Seaweed gathering spots provide enough seaweed for one family in one gathering event Only harvested as much as the household could use, in amounts that could be humanly carried off the beach (Bertha Peters, Pers. Comm. 2005); traditionally with a kewoy (burden basket)	Surf fish are declining in quantity; harder and harder to catch Elders talk of when they used to dry the surfish on the beach as a kid they would return home with ~2 gunny sacks	The Yurok Tribe sets tribal quotas; families gather for their own households and to share with others. The commercial season and subsistence season run simultaneously (subsistence is longer) and ceremonial use is not restricted	One family three times share with

Note: the harsh weather conditions of the Pacific Northwest serve as a natural climatic barrier, severely limiting fishing and coastal harvesting opportunities.

5. Avoiding the loss of biocultural diversity when creating Marine Protected Areas

"The closure of the bilhaa (abalone) fishery has had a significant impact on the Gitxaala people. Specifically, the closure has resulted in a loss of a critical food resource, a loss of a critical trade item, and an increase of surveillance upon aboriginal harvesters [without a corresponding increase of surveillance of the commercial/illegal underwater fishery]." (Menzies 2010:218)

"When you take an abalone there is a prayer of thanks. In that is an inherent understanding that abalone will provide life as sustenance, but also will take on a new life, in the regalia. It is still alive." (Robert McConnell Sr., Personal Communication, 2010)

"From a tribal perspective, the decline of lamprey has had at least three negative effects: (1) loss of culture, (2) loss of fishing opportunities in traditional fishing areas, and (3) tribal members must travel to lower Columbia River tributaries to harvest lamprey. For example, many young tribal members do not know how to catch and prepare lamprey for drying. In addition, young tribal members are losing important myths and legends associated with lamprey." (Close et al. 2002: 19)

"Individuals or families who are known for their relationship to a natural resource, e.g., the best fishers, trackers, and clam diggers and makers of harpoons, spears, and nets, can, over time, lose the respect and honor associated with their skills if the resource disappears or is adversely affected." (Turner et al. 2008:10).

Cultural diversity is defined as the variation of tangible and intangible traditions held by indigenous peoples: language, knowledge, and belief systems, narratives, music and the arts, culinary, medicinal, agricultural, wild-harvesting, and environmental practices. The diversity of cultural traditions connected to diverse biological species is known as ***biocultural diversity***, a concept researchers use when describing and measuring the intrinsic relationship between cultural and biological diversity (Posey 1999, Stepp et al. 2002). When cultural diversity is threatened, biological diversity is also threatened; when cultural diversity is revitalized, biological diversity is more likely to be restored (Pfeiffer and Ortiz 2007, Pfeiffer and Voeks 2008, Maffi and Woodley 2010). For example, the widespread decline in salmon abundance and distribution throughout the Pacific Northwest has negatively impacted tribal traditions including the building and maintenance of fish traps and weirs, the persistence of the First Salmon ceremony amongst inland tribes, and tribal dietary and economic health.

Historically, the 130-plus coastal and marine organisms harvested by the Yurok tribe were used for many reasons beyond food or commerce. Marine fish, shellfish, crustaceans, mammals, birds, plants, anenomes, and many other species have tangible uses as food, medicine, clothing (regalia), ornaments, handicrafts, and tools, and intangible uses in stories, songs, dances, ceremonies, beliefs, sayings, and traditional knowledge systems. For the Yurok, shellfish including abalone, clam, and dentalium are key components of ritual regalia (dress aprons, shawls, necklaces, and earrings), decoration of cultural and sacred handicrafts (baskets, caps) and ceremonies. Prehistorically, clamshell beads were "considered legal tender throughout most of California and were also used to transact business" (Bean 1992: 321); for the Yurok, dentalium is used as traditional money to settle debts or purchase items. Salmon is a cultural keystone species, critical to the identity and wellbeing of the Yurok Tribe. Seaweed, prepared traditionally as "cakes" are preserved, which provide a needed source of iodine. Seaweed is one of only two food sources (acorn water is the other) allowed to fasting participants in Yurok ceremonies (Robert McConnell, Sr., Personal Communication, 2010).

For tribal peoples, the loss of access to culturally important resources does not only impact the individual and the individual's household; it impacts the community at large, the socio-economic, socio-cultural and socio-political relationships within the community (Charles and Wilson 2009). As Turner et al. note, "the decline or removal of key food sources can introduce a cascading effect in which important associated cultural practices and institutions are also lost" (2008:7). For example, wild-harvesting of marine resources directly impacts tribal food security: not only is wild food availability important for household subsistence, large harvests are consistently shared with elders. Even when harvesting commercially, a portion of the harvest is distributed to elders. Just as the loss of terrestrial wild-

harvested foods has damaged Native health throughout the world, the loss of salmon, seaweed and fish in tribal diets leads to serious health problems (Norgaard 2005, Whitesell et al. 2007).

Describing centuries of territorial loss and resource decline, Turner et al. point to cultural and lifestyle losses, the loss of identity, health losses, the loss of self-determination and influence, economic, emotional, psychological, and knowledge losses, and the loss of order and place in the world. In her study of the importance of place-based fisheries to the Karuk tribe, Stercho notes, "[t]he mismanagement and deterioration of ecosystem health has negatively affected the cultural, spiritual, and physical well-being of the Karuk peoples" (2006:101).

More seriously, the loss of access to culturally important resources, along with displacement from landscapes or seascapes considered to be sacred, directly impacts on the individual's, family's, and community's ability to sustain deeply-held cultural and spiritual relationships with not only the species used, but with associated species and their habitats – relationships that tribal peoples see as two-way, and as part of their ancestral responsibility. Entire habitats are important culturally and spiritually to the Yurok – such as the lagoons, used as training places for ceremony and for acquiring certain powers and medicines. Likewise, the Yurok are important to the health and diversity of entire habitats – such as the rocky intertidal where seaweed beds continued to be cared for as generations past.

6. Conclusions

"American Indian peoples must be involved in the management of those resources that provided them with food, shelter, transportation, and medicines for thousands of years. With the advent of dam construction...native peoples of the Pacific Northwest began to observe the virtual extinction of their sacred foods – the salmon, sturgeon, eels, huckleberries, and other natural resources so abundant prior to European contact." (Burney et al. 1998:15)

"Tribal people possess a culture-based knowledge of ecosystems that has evolved and accumulated over thousands of years and is continually tested and improved for the lasting maintenance of the tribal existence. The collection and use of this complex knowledge of the physical world – including values, histories, stories, ethics, and the culture of indigenous ways of life – is an integral part of any tribal decision-making process." (Wolfley 1998:5)

"...too much time and effort [is spent] on a science versus traditional knowledge debate; we should reframe it instead as a science and traditional knowledge dialogue and partnership." (Berkes 2009:151)

Yurok fishing regulations pre-date the California Department of Fish and Game by thousands of years. Strong resource management traditions sustained, and still sustain, relatively large, sedentary indigenous populations along the Pacific Northwest coastline. Native communities successfully applied, and continue to apply, adaptive resource management for diverse and abundance ecosystems within their ancestral territories via a combination of deeply-held belief systems and sophisticated resource utilization and management technologies, augmented by early accumulation, transfer, and application of scientific knowledge. Northwest California tribes and tribal communities such as the Yurok are uniquely positioned and qualified to [co]manage marine resources and contribute to scientific studies relating to those resources.

Drawing from a spiritual tradition that holds the natural world to be sacred, supported by a constellation of stewardship traditions that conserve species *in situ*, Yurok Tribal elders see humans as ecological keystone species, critical to the health and long-term welfare of the resources within Tribal Ancestral Territories. "This intrinsic relationship, which includes an inherent and traditional responsibility to peesh-kahl (the ocean) and the species that live within, stems from the creation of Yurok People and continues unbroken since time immemorial." (Yurok Tribe 2010b). Tribal programs to maintain and restore culturally important species and habitats began with the First Salmon Ceremony and traditional fish weirs, and continue with GPS units and water monitoring equipment.

Intimately detailed understanding of frequently visited habitats (e.g., mussel banks, seaweed patches, river mouths) in the form of local ecological knowledge serves as both a long-term reality check and an early-warning device for environmental changes.

As noted in Section 5, cultural continuity and cultural resilience of indigenous peoples such as the Yurok is tied to the ability to access a wide diversity or resources, not only to maintain essential traditions, but also to cope with seasonal (or more permanent) shortages. Traditional Yurok use of over 130 coastal and marine species incorporates rotational use of resources, adjusting harvest levels of different species in response to seasonal fluctuations. The current practice of narrowly specifying harvest rights (i.e., current Department of Fish and Game regulations) for only certain types of marine organisms ignores the critical need for subsistence and ceremonial rights to be applied to a wide range of species that can substitute for less available species. Additionally, the coarse, or macro-scale assignation of "levels of protection" (LOP) to culturally important species without acknowledging seasonal, temporal, geographical, and cultural variation in harvesting practices across the region endangers ecologically sustainable and culturally essential harvesting practices by tribes and tribal communities along the entire coast.

Joint stewardship within Yurok Ancestral Territories, in the form of co-management programs for coastal and marine resources would serve to conserve, restore, and revitalize both biological and cultural diversity. We propose a system that combines western scientific knowledge and traditional ecological and cultural knowledge for improved resource management and effectiveness of MPAs within an inclusionary, consensus-based approach that includes the sharing of decision-making power. The North Coast region is remote, with limited research and enforcement capacity within a relatively vast area. Co-management programs involving on-site local experts and residents would more effectively and consistently manage natural resources at lower cost, and significantly augment existing management capacity. Instead of relying on disparate methodologies to studying and monitoring separate species or habitats by externally-based researchers (e.g., the prevalent model), a co-management program emulating the Yurok Tribal Fisheries Program – which combines fisheries management, biological monitoring, ecosystem restoration, and regional planning and is linked to cultural revitalization – would enable a more comprehensive, rather than a compartmentalized, approach.

Collaborative field research between the Yurok Tribe and academic scientists would be an excellent way to address the lack of adequate studies comparing the relative impact of artisanal, subsistence, or culturally regulated harvesting on marine resources. Joint biodiversity monitoring and evaluation programs involving local experts have proven to significantly expand programmatic assessment (both qualitatively and quantitatively) throughout the United States and internationally (Pattengill-Semmens and Semmens 2003; Danielsen et al. 2005; Bonney et al. 2009, Silvertown 2009), and is successfully conducted in California in efforts including: bird censuses by local chapters of the Audubon Society, citizen scientists monitoring marine resources and ecosystem health as part of the Coastal Observation and Seabird Survey Team (COASST); the Nearshore Ecosystem Database of Reef Check California (RCCA)[†]; the Beach Watch and Long-term Monitoring Program and Experiential Training for Students (LiMPETS Farallones Marine Sanctuary Association[†]; citizen-monitoring with the Southern California Coastal Water Research Project; and the citizen watershed monitoring network of the Monterey Bay Sanctuary.

[†] Reef Check Foundation scuba surveys of rocky intertidal reefs and the Farallones Marine Sanctuary Association Beach Watch and LiMPETS program are part of the North Central Coast MPA Baseline Program funded by the MPA Monitoring Enterprise (http://www-csgc.ucsd.edu/NEWSROOM/NEWSRELEASES/2010/NCCMPAawardSummaries.html).

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